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L7          16 LSAASWRTQSIYFLLTDRFGRTDNS/SQSP

=> s l7 and sql=484
         72339 SQL=484
L8           6 L7 AND SQL=484

=> file hcaplus
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FULL ESTIMATED COST                             150.20     150.41

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=> s l8
L9           6 L8

=> d l9 1-6

L9   ANSWER 1 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2005:1261024  HCAPLUS
DN   144:5525
TI   Production of ethanol from enzymatically hydrolyzed starch
IN   Bhargava, Swapnil; Frisner, Henrik; Bisgard-Frantzen, Henrik; Tams, Jeppe
     Wegener
PA   Novozymes North America, Inc., USA; Novozymes A/S
SO   PCT Int. Appl., 54 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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PI   WO 2005113785        A2    20051201    WO 2005-US16390        20050511
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
             NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
             SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
             ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
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     CA 2566252            A1    20051201    CA 2005-2566252        20050511
     EP 1751295            A2    20070214    EP 2005-754334         20050511
          R:  AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
              IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA,
              HR, LV, MK, YU
     IN 2006CN04176        A     20070622    IN 2006-CN4176         20061113
PRAI US 2004-570727P       P     20040513
     US 2004-632201P       P     20041201
     US 2004-633293P       P     20041203
     WO 2005-US16390       W     20050511

L9   ANSWER 2 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2005:1075548  HCAPLUS
DN   143:345492
TI   Enzymic starch liquefaction process for improved ethanol production
IN   Bhargava, Swapnil; Bisgard-Frantzen, Henrik; Frisner, Henrik;
     Vikso-Nielsen, Anders; Johal, Malcolm
PA   Novozymes North America, Inc., USA; Novozymes A/S
SO   PCT Int. Appl., 30 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 2
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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PI   WO 2005092015        A2    20051006    WO 2005-US9218         20050318
     WO 2005092015        A3    20060727
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             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
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             NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,
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             RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
             MR, NE, SN, TD, TG
     US 2007141689         A1    20070621    US 2006-593164         20061018
PRAI US 2004-554615P       P     20040319
     US 2004-575133P       P     20040528
     WO 2005-US9218        W     20050318

L9   ANSWER 3 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2005:696593  HCAPLUS
DN   143:192412
TI   Processes for producing a fermentation product, such as ethanol, from
     milled starch without gelatinization using glucoamylase from Athelia
     rolfsii and acid α-amylase
IN   Allain, Eric; Wenger, Kevin S.; Bisgard-Frantzen, Henrik
PA   Novozymes North America, Inc, USA; Novozymes A/S
SO   PCT Int. Appl., 96 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 2
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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PI   WO 2005069840        A2    20050804    WO 2005-US1147         20050114
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        RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
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    EP 1745122          A2    20070124    EP 2005-711438          20050114
        R:  AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
            IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA,
            HR, LV, MK, YU
PRAI US 2004-537071P    P     20040116
    US 2004-636013P     P     20041214
    WO 2005-US1147      W     20050114

L9  ANSWER 4 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN  2004:1059495  HCAPLUS
DN  142:22620
TI  Brewing with simultaneous saccharification of starch
IN  Olsen, Hans Sejr; Norman, Barrie Edmund; Wuempelmann, Mogens; Tams, Jeppe
    Wegener
PA  Novozymes A/S, Den.
SO  PCT Int. Appl., 43 pp.
    CODEN: PIXXD2
DT  Patent
LA  English
FAN.CNT 1
    PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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PI  WO 2004106533       A1     20041209    WO 2004-DK373          20040528
        W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
            CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
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        RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
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    EP 1633878          A1     20060315    EP 2004-735196         20040528
        R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK
    CN 1798847          A      20060705    CN 2004-80015139       20040528
    US 2007031952       A1     20070208    US 2005-558552         20051128
PRAI DK 2003-812        A      20030530
    WO 2004-DK373       W      20040528
RE.CNT  11    THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9  ANSWER 5 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN  2004:780639  HCAPLUS
DN  141:294792
TI  Alcohol product processes
IN  Olsen, Hans Sejr; Pedersen, Svend; Festersen, Rikke Monica
PA  Novozymes A/S, Den.
SO  PCT Int. Appl., 43 pp.
    CODEN: PIXXD2
DT  Patent
LA  English
FAN.CNT 1
    PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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PI  WO 2004080923       A2     20040923    WO 2004-DK154          20040310
    WO 2004080923       A3     20041216
        W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
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            GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
            LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
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            ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,
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    US 2004219649       A1     20041104    US 2004-797393         20040310
    EP 1604019          A2     20051214    EP 2004-718914         20040310
        R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK
    CN 1788083          A      20060614    CN 2004-80012682       20040310
PRAI US 2003-453326P    P      20030310
    WO 2004-DK154       W      20040310

L9  ANSWER 6 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN  2002:368675  HCAPLUS
DN  136:385041
TI  Secondary starch liquefaction in fermentation ethanol production
IN  Veit, Christopher; Felby, Claus; Fuglsang, Claus Crone
PA  Novozymes A/S, Den.; Novozymes North America, Inc.
SO  PCT Int. Appl., 33 pp.
    CODEN: PIXXD2
DT  Patent
LA  English
FAN.CNT 1
    PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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PI  WO 2002038787       A2     20020516    WO 2001-DK737          20011109
    WO 2002038787       A3     20020926
        W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
            CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
            GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
            LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
            PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
            US, UZ, VN, YU, ZA, ZW
        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
            DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
            BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
    AU 200213841        A      20020521    AU 2002-13841          20011109
    EP 1335982          A2     20030820    EP 2001-982195         20011109
        R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
            IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
    US 2004091983       A1     20040513    US 2003-416393         20030509
    US 7244597          B2     20070717
    US 2007155001       A1     20070705    US 2007-620829         20070108
PRAI DK 2000-1676       A      20001110
    US 2000-252213P     P      20001121
    DK 2000-1854        A      20001211
    US 2000-256015P     P      20001215
    WO 2001-DK737       W      20011109
    US 2003-416393      A3     20030509
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=> index bioscience
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                        SINCE FILE      TOTAL
                                               ENTRY    SESSION
FULL ESTIMATED COST                             22.68     173.09

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
       AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
       CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
       DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 15:31:16 ON 09 AUG 2007

68 FILES IN THE FILE LIST IN STNINDEX

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=> s gelatiniz? (p) (alpha (w) amylase) (p) glucoamylase
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          0*  FILE ANTE
          0*  FILE AQUALINE
          4*  FILE BIOENG
          30  FILE BIOSIS
          41* FILE BIOTECHABS
          41* FILE BIOTECHDS
          0*  FILE BIOTECHNO
          13  FILE CABA
          62  FILE CAPLUS
          3*  FILE CEABA-VTB
          0*  FILE CIN
         114  FILE DGENE
           2  FILE DISSABS
  27 FILES SEARCHED...
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          97  FILE USPATFULL
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           9  FILE USPAT2
          0*  FILE WATER
          24  FILE WPIDS
          24  FILE WPINDEX

  26 FILES HAVE ONE OR MORE ANSWERS,   68 FILES SEARCHED IN STNINDEX

L10  QUE GELATINIZ? (P) (ALPHA (W) AMYLASE) (P) GLUCOAMYLASE

=> file biosis, hcaplus, scisearch
COST IN U.S. DOLLARS                        SINCE FILE      TOTAL
                                               ENTRY    SESSION
FULL ESTIMATED COST                              1.89     174.98

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=> s l10
L11         107 L10

=> dup rem l11
PROCESSING COMPLETED FOR L11
L12          69 DUP REM L11 (38 DUPLICATES REMOVED)

=> s l12 and aspergillus
L13          15 L12 AND ASPERGILLUS

=> s l12 and beer
L14           0 L12 AND BEER

=> d l12 30-35 ibib, kwic

L12  ANSWER 30 OF 69  BIOSIS  COPYRIGHT (c) 2007 The Thomson Corporation  on
     STN                                                    DUPLICATE 12
ACCESSION NUMBER:    1993:387449  BIOSIS
DOCUMENT NUMBER:     PREV199396062749
TITLE:               Structure of tapioca pearls compared to starch noodles from
                     mung beans.
AUTHOR(S):           Xu, Ansui [Reprint author]; Seib, Paul A.
CORPORATE SOURCE:    Am. Maize-Prod. Co., Hammond, IN, USA
SOURCE:              Cereal Chemistry, (1993) Vol. 70, No. 4, pp. 463-470.
                     CODEN: CECHAF. ISSN: 0009-0352.
DOCUMENT TYPE:       Article
LANGUAGE:            English
ENTRY DATE:          Entered STN: 23 Aug 1993
                     Last Updated on STN: 28 Sep 1993
AB   Commercial tapioca pearls contain approximately 60% gelatinized
     starch, as determined by differential scanning calorimetry and
     glucoamylase digestibility.  Exhaustive digestions showed that 2,
     5, and 6% of cooked tapioca pearls were resistant to alpha-
     amylase, acid (1M HCl at 35 degree C), and to a combination of
     isoamylase and beta-amylase, respectively, whereas digestion of cooked.
     . of resistant residues.  All the resistant residues gave the
     B-polymorphic X-ray pattern typical of retrograded starch.  At 75%
     moisture, the alpha-amylase-resistant residue did not
     melt below 147 degree C, whereas the acid-resistant residue melted at 128
     degree C (T-p), and the isoamylase and beta-amylase-resistant residue
     melted at 92 degree C (T-p).  Size-exclusion chromatography showed that
     the alpha-amylase-resistant residues contained unit
     chains with a peak at a number-average degree of polymerization (DP-n) of
     33-37, and the acid-resistant residues.  .  .

L12  ANSWER 31 OF 69  HCAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:        1993:558571  HCAPLUS
DOCUMENT NUMBER:         119:158571
TITLE:                   Characteristic change of various starch granules by
                         enzymatic treatment. I. Characteristic change of rice
                         starch granules by enzymatic treatment
```

AUTHOR(S): Fukai, Yohichi; Takaki, Etsuko; Kobayashi, Shoichi
CORPORATE SOURCE: Agric. Technol. Inst. Nagano Farmers' Fed., Suzaka, 382, Japan
SOURCE: Denpun Kagaku (1993), 40(3), 263-9
CODEN: DPNKAV; ISSN: 0021-5406
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB Rice starch granules were treated with ***.alpha.-amylase***, ***glucoamylase***, and β-amylase under various conditions and changes in the characteristics of the starch granules due to enzyme treatments were investigated. ***Glucoamylase*** and ***.alpha.-amylase*** degraded rice starch granules and made many holes in their surfaces, whereas, β-amylase had little degrading effect. From observations by scanning electromicroscopy, it was found that the holes made by ***.alpha.-amylase*** were large and deep. Also β-amylase made deeper holes than those of ***.alpha.-amylase***. The number and size of the holes increased with the degree of the enzymic degradation The starch granules were treated by ***.alpha.-amylase*** until the degree of degradation reached the range of 0.5.apprx.3.0%, and then, the suspension of the granules was subjected to a micro-viscog. anal. The amount of ***.alpha.-amylase*** adsorbed on the surface of the starch granule was 0.36-4.8 IU/g over the range of degradation The starch granules adsorbing the enzymes were ***gelatinized*** and yielded a thin paste. However, no marked change in the rheol. properties of the starch granules treated with β-amylase or ***glucoamylase*** was observed even when the degradation was large, when compared with those of the granules prior to treatment.

L12 ANSWER 32 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:429134 HCAPLUS
DOCUMENT NUMBER: 117:29134
TITLE: Preparation of cereal starch hydrolyzates containing at least 95% glucose
INVENTOR(S): Anger, Horst; Richter, Manfred; Kettlitz, Bernd; Schirner, Rolf; Haeusler, Gerhard; Roick, Thomas
PATENT ASSIGNEE(S): Zentralinstitut fuer Ernaehrung, Germany
SOURCE: Ger. (East), 5 pp.
CODEN: GEXXA8
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DD 298431	A5	19920220	DD 1989-332057	19890824
PRIORITY APPLN. INFO.:			DD 1989-332057	19890824

AB In the title process, giving products for food and tech. use, aqueous suspensions of 20-30% starch are treated with ***glucoamylase*** (I) and small amts. of ***.alpha.-amylase*** (II) at pH 3.5-5.5 and temps. ≤3° above the ***gelatinization*** temperature of the starch used for 12-96 h and the hydrolyzate is separated from unreacted starch. Stirring 500 g aqueous slurry of 146 g rye starch (85.6% dry solids) with 50 mg NaHSO3, 10 mg bacterial II (17,910 units/g), and 1.6 mL I from Endomycopsis bispora (2863 units/mL) at pH 5 and 54° for 48 h, centrifuging, and washing the solids with H2O gave an 82.1% solution of hydrolyzate containing glucose 95.3, disaccharides 1.9, and 1.1% oligosaccharides (based on solids).

L12 ANSWER 33 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 13
ACCESSION NUMBER: 1993:79668 HCAPLUS
DOCUMENT NUMBER: 118:79668
TITLE: Kinetics of enzymic hydrolysis of cassava flour starch - optimization and modelling
AUTHOR(S): Waliszweski, Kryzsztof N.; Garcia Alvarado, Miguel; De la Cruz Medina, Javier
CORPORATE SOURCE: Inst, Technol., Veracruz, Mex.
SOURCE: International Journal of Food Science and Technology (1992), 27(4), 465-72
CODEN: IJFTEZ; ISSN: 0950-5423
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This study was conducted to model the kinetics of cassava flour hydrolysis by Miles Taka-Therm L-170 ***.alpha.-amylase*** and Diazyme L-200 ***glucoamylase*** to produce glucose syrup. Maximum starch concentration was 33% due to a controlled process of flour ***gelatinization*** by gradual temperature increase, and parallel starch hydrolysis by thermostable ***alpha.-amylase*** activity, preventing excess viscosity. The time of hydrolysis was two and half hours of ***.alpha.-amylase*** activity and 36 h of ***glucoamylase*** activity with the final yield of 90-93% of glucose. Exponential hyperbolic models were obtained to predict the kinetics of hydrolysis by both amylase and ***glucoamylase***, with a generalized correlation coefficient >0.94.

L12 ANSWER 34 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:424906 HCAPLUS
DOCUMENT NUMBER: 117:24906
TITLE: Twin-screw extrusion cooker as a bioreactor for starch processing
AUTHOR(S): Linko, Pekka
CORPORATE SOURCE: Helsinki Univ. Technol., Espoo, Finland
SOURCE: Food Science and Technology (New York, NY, United States) (1992), 49(Food Extrusion Sci. Technol.), 335-44
CODEN: FSTEEM; ISSN: 0891-8961
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Most work described was done either by a Clextral BC 45 or with a Werner and Pfleiderer Continua 58 twin-screw extruder. The length of the screws in the former was 600 mm with 50 mm reverse pitch elements at the die end, and in the latter, 1222.5 mm with 75 mm reverse screw elements were placed at 470 mm distance for efficient starch ***gelatinization***, and 3 short mixing elements at 590 mm, 835 mm, and 1080 mm distance from the beginning. The feed rate was kept constant at about 12 kg/h (d.m.) and 30 kg/h (d.m.), resp. Industrial grade barley and wheat starch, and milled whole barley and oats were used as raw material. Thermostable Bacillus licheniformis ***.alpha.-amylase*** Termamyl was used for liquefaction, and either Aspergillus niger ***glucoamylase*** 150L or barley β-amylase (ABM 1500L) and Klebsiella aerogenes pullulanase (ABM pulluzyme S 2000) were used for saccharification. The state of the are in the novel concept of using a twin-screw extrusion cooker as a continuous bioreactor in starch processing is presented.

L12 ANSWER 35 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:253761 HCAPLUS
DOCUMENT NUMBER: 118:253761
TITLE: Properties of α-amylase and glucoamylase from Aspergillus awamori
AUTHOR(S): Yasuda, Masaki; Yamada, Takeshi; Ishihara, Masanobu; Toyama, Seizen
CORPORATE SOURCE: Coll. Agric., Univ. Ryukyus, Okinawa, 903-01, Japan
SOURCE: Ryukyu Daigaku Nogakubu Gakujutsu Hokoku (1992), 39, 125-34
CODEN: RDNGBM; ISSN: 0370-4246
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB The properties of ***.alpha.-amylase*** and ***glucoamylase*** from a selected strain (Aspergillus awamori Nakazawa,

IFO 4033) for awamori beverage production were investigated. ***.alpha.-Amylase*** had maximum activity at pH 4.5-5.5 and 65° and was quite stable at pH 3.0-6.0 and up to 60°. ***Glucoamylase*** had maximum activity at pH 4.3-5.5 and 60° and was stable at pH 3.5-6.0 and up to 60°. ***Glucoamylase*** was active on ***gelatinized*** starch prepared from glutinous rice, nonglutinous rice, broken rice imported from Thailand (raw material for awamori beverage, indica type), potato, sweet potato, wheat, corn and soluble starch. The hydrolysis degree of starch prepared from broken rice of Thailand was rapidly increased with time up to 2 h. The limit of hydrolysis of the starch by the enzyme was 82%. The enzyme could digest raw rice starch maximally at pH 3.2-3.5. The enzyme was very active on raw starch of glutinous, nonglutinous, and broken rices but was only slightly active on a raw potato starch.

=> d l12 1-69 ibib, kwic

L12 ANSWER 1 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:632753 HCAPLUS
DOCUMENT NUMBER: 145:98570
TITLE: Chimeric α-amylases comprising catalytic and carbohydrate-binding modules and the use for starch processing
INVENTOR(S): Fukuyama, Shiro; Matsui, Tomoko; Soong, Chee-Leong; Allain, Eric; Vikso-Nielsen, Anders; Udagawa, Hiroaki; Liu, Ye; Duan, Junxin; Wu, Wenping; Andersen, Lene Nonboe; Landvik, Sara
PATENT ASSIGNEE(S): Novozymes A/S, Den.; Novozymes North America, Inc.
SOURCE: PCT Int. Appl., 340 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2006069290	A2	20060629	WO 2005-US46725	20051222
WO 2006069290	A3	20070531		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
AU 2005319074	A1	20060629	AU 2005-319074	20051222
US 2006148054	A1	20060706	US 2005-316535	20051222
US 2006172403	A1	20060803	US 2005-315730	20051222
PRIORITY APPLN. INFO.:			US 2004-638614P P	20041222
			US 2005-650612P P	20050207
			WO 2005-US46725 W	20051222

AB The present invention is based on the discovery that by adding or exchanging a carbohydrate-binding module (CBM) in certain ***.alpha.-amylases***, the enzymic activity and specificity can be altered. Selecting a catalytic domain with desired properties (e.g., pH profile, temperature profile, oxidation resistance, calcium stability, substrate affinity, or product profile) can be combined with a DBM with stronger or weaker binding affinities. The hybrids have altered properties relative to ***.alpha.-amylase*** without the CBM and/or relative to prior art amylases, such as having increased stability and/or activity at low pH (pH less than 4), increased activity towards granular starch, and/or increased degradation of granular starch at low pH even in the absence of ***glucoamylase*** or at low ***glucoamylase*** levels, and/or with altered product profile. Preferred are any CBM amino acid sequence selected fro the group consisting of Athelia rolfsii ***glucoamylase***, Pachykytospora papayracea ***glucoamylase***, Valsaria rubricosa ***.alpha.-amylase***, and Meripilus giganteus ***.alpha.-amylase***. Due to the superior hydrolysis activity of these polypeptides, the overall starch conversion process can be performed without having to ***gelatinize*** the starch; the polypeptides hydrolyze granular starch in a raw starch process as well as fully or partially ***gelatinized*** starch in a traditional starch process.

L12 ANSWER 2 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1352515 HCAPLUS
DOCUMENT NUMBER: 146:128197
TITLE: Characterization of starches from tuber of Pinellia ternata (Thunb.) Breitenbach, rhizome of Alisma orientale Juzepczuk and seed of Coix lacryma-jobi Linne var. ma-yuen Stapf
AUTHOR(S): Boki, Keito; Yamada, Yoshihide; Kitakouji, Manabu
CORPORATE SOURCE: Fac. Pharm. Sci., Kinki University, Higashiosaka, 577-8502, Japan
SOURCE: Journal of Applied Glycoscience (2006), 53(4), 241-247
CODEN: JAGLFX; ISSN: 1344-7882
PUBLISHER: Japanese Society of Applied Glycoscience
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Various physicochem. properties were investigated to assess the potential of starches from the residual crude drugs after extraction The powdered crude drugs (C) differed from each other in harvest time or district of cultivation. Starches (s) were prepared from tubers of Pinellia ternata (Thunb.) Breitenbach (PT), rhizomes of Alisma orientale Juzepczuk (AO) and seeds of Coix Iacryma-jobi Linne var. ma-yuen Stapf (CL). C-PTs, C-AOs and C-CLs contained 41.4-77.5, 12.5-40.5 and 1.5-5.8% starch, resp. S-PT, S-AO and S-CL granules measured were 8.2 ± 0.2-16.0 ± 0.4, 6.1 ± 0.2 and 11.5 ± 0.4-13.5 ± 0.4 μm, resp., in average diameter S-PTs, S-AOs and S-CLs were classified as CA-type. The amount of P in S-PTs, S-AOs and S-CLs was 62-330, 93-110 and 75-210 μg/g, resp. That of Ca was 320-530, 48-260 and 18-33 μg/g, resp. S-PT-1, S-AO-2 and S-CL-2 showed endothermic curves from 67.3 to 85.0, 58.9 to 84.2 and 59.2 to 81.0°, their enthalpy being 3.4 ± 0.3, 4.2 ± 0.0 and 4.5 ± 0.2 J/g, resp. S-PT-1, S-AO-2 and S-CL-2 are expected to be available for starch ***gelatinized*** at low energy. The digestibility of raw S-PTs, S-AOs and S-CLs by ***.alpha.-amylase*** was 35.3 ± 2.4, 38.3 ± 2.3 and 62.2 ± 5.2%, resp., at 72 h. The main oligosaccharide products from the raw starches (digestibility: S-PT-1, 2.4%; S-AO-2, 5.8%; S-CL-2, 7.1%) digested by ***.alpha.-amylase*** were maltotriose (35.8-40.0%) and maltose (35.8-42.8%). The main product from the starches (digestibility: S-PT-1, 4.8%; S-AO-2, 12.1%; S-CL-2, 18.7%) digested by ***glucoamylase*** was glucose (97.6-99.5%). The digested S-PT-1, S-AO-2 and S-CL-2 granules (digestion time, 1 h) were roughly eroded by ***.alpha.-amylase*** all over the surface and the starches digested by ***glucoamylase*** maintained their original form with a few fine grains on their surface. A few granules of S-CL-2 digested by ***glucoamylase*** lost their original form. The S-PT-1(A), S-AO-2(A) and S-CL-2(A) digested by ***.alpha.-amylase*** are expected to be available as an adsorbent, because of their porosity. The results of ***gelatinization*** temperature and enthalpy suggest that the thermostability

of S-PT-1, S-AO-2 and S-CL-2 digested by ***.alpha.-amylase*** was higher than that of the starches digested by ***glucoamylase***.

L12 ANSWER 3 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:594761 HCAPLUS
DOCUMENT NUMBER: 145:484937
TITLE: Development of new α-amylases for raw starch hydrolysis
AUTHOR(S): Viksoe-Nielsen, Anders; Andersen, Carsten; Hoff, Tine; Pedersen, Sven
CORPORATE SOURCE: Novozymes A/S, Bagsvaerd, DK-2880, Den.
SOURCE: Biocatalysis and Biotransformation (2006), 24(1/2), 121-127
CODEN: BOBOEQ; ISSN: 1024-2422
PUBLISHER: Taylor & Francis Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB This paper describes the discovery of a new 4 domain ***.alpha.-amylase*** from Anoxybacillus contaminans which very efficiently hydrolyzes raw starch granules. Compared to traditional starch liquefying ***.alpha.-amylases***, this new 4 domain ***.alpha.-amylase*** contains a starch binding domain. The presence of this starch binding domain enables the enzyme to efficiently hydrolyze starch at a temperature below the ***gelatinization*** temperature At a reaction temperature of 60°C and in combination with a ***glucoamylase*** from Aspergillus niger it was possible to liquefy 99% of the starch obtaining a DX value of 95%. Furthermore, we describe how the current HFCS (high fructose corn syrup) process can be turned into a low temperature simultaneous liquefaction and saccharification process by using this new 4 domain ***.alpha.-amylase*** in combination with a ***glucoamylase***.

L12 ANSWER 4 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:696593 HCAPLUS
DOCUMENT NUMBER: 143:192412
TITLE: Processes for producing a fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid ***.alpha.-amylase***
INVENTOR(S): Allain, Eric; Wenger, Kevin S.; Bisgard-Frantzen, Henrik
PATENT ASSIGNEE(S): Novozymes North America, Inc, USA; Novozymes A/S
SOURCE: PCT Int. Appl., 96 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005069840	A2	20050804	WO 2005-US1147	20050114
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1745122	A2	20070124	EP 2005-711438	20050114
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, LV, MK, YU				

PRIORITY APPLN. INFO.:		
US 2004-537071P	P	20040116
US 2004-636013P	P	20041214
WO 2005-US1147	W	20050114

TI Processes for producing a fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid ***.alpha.-amylase***

AB The present invention provides processes of producing a fermentation product from starch-containing material, such as granular starch, without ***gelatinization*** of said starch-containing material using ***glucoamylase***. The processes for producing a fermentation product, such as ethanol, from milled starch-containing material comprise (a) saccharifying the milled starch-containing material with a ***glucoamylase*** (EC 3.2.1.3) at a temperature below the initial ***gelatinization*** temperature of said starch-containing material, (b) fermenting using a fermenting organism. The preferred ***glucoamylase*** is one from Athelia rolfsii or its homologs. In a preferred embodiment an ***alpha-amylase*** (EC 3.2.1.1) may be added to the process of the invention, such as one from Aspergillus or Bacillus. In another embodiment a hybrid enzyme is used comprising catalytic domain (CD) and a carbohydrate-binding module (CBM) derived from an ***alpha-amylase*** mutant or a ***glucoamylase***.

IT Enzyme functional sites
(active, hybryd amylase comprising; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Gelation
(at temperature below initial; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Temperature
(below initial ***gelatinization***; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Organ, plant
(cob, starch from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Fusion proteins (chimeric proteins)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(comprising amylase catalytic and carbohydrate-binding domains; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Carbohydrates, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(concentration kept below 3 weight %; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Milling (size reduction)

(dry or wet; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Athelia rolfsii
(***glucoamylase*** from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Peptides, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(linker, hybryd enzyme comprising; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Saccharification
(milled starch; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Protein sequences
(of ***glucoamylase*** from Athelia rolfsii, and Aspergillus α -***amylases***; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT DNA sequences
(of ***glucoamylase*** gene from Athelia rolfsii; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Acidity
(pH 4-5; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Fermentation
Molecular cloning
(processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Alcohols, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Fuels
(production; processes for producing fermentation product, such as ethanol, from
milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Enzymes, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(saccharifying, use of; processes for producing fermentation product, such as
ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Mutagenesis
(site-directed, deletion, in bacterial α - ***amylases***; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Mutagenesis
(site-directed, substitution, in bacterial α - ***amylases***; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Cereal (grain)
Fruit
Hordeum vulgare
Manihot esculenta
Oryza sativa
Root
Sago palm
Secale cereale
Seed
Solanum tuberosum
Sorghum bicolor
Stem
Triticum aestivum
Tuber (plant organ)
Zea mays
(starch from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Organelle
(starch granule, fermentation product from; processes for producing fermentation
product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Sorghum
(subglabrescens group, starch from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Enzyme functional sites
(substrate-binding, carbohydrate-binding, hybryd amylase comprising; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Fungi
(α -***amylase*** and acid protease from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Aspergillus kawachii
(α -***amylase*** domains from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT Aspergillus niger
(α -***amylase*** from, ***glucoamylase*** domains from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α - ***amylase***)

IT Aspergillus
Aspergillus awamori
Aspergillus oryzae

Bacillus amyloliquefaciens
Bacillus licheniformis
Eubacteria
Geobacillus stearothermophilus
(α -***amylase*** from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 9005-25-8, Starch, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(-containing material, fermentation product from; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 9000-90-2
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(acid, addition of; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 861911-09-3 861911-10-6 861911-11-7, Amylase, α- (Aspergillus niger) 861911-12-8D, Amylase, α- (Bacillus licheniformis), fragments, mutants, and fusion products 861911-13-9D, Amylase, α- (Bacillus amyloliquefaciens), fragments, mutants, and fusion products 861911-14-0D, mutated variants
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(amino acid sequence; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 861911-08-2
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(nucleotide sequence; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 64-17-5P, Ethanol, preparation
RL: BPN (Biosynthetic preparation); NUU (Other use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(potable, industrial, or fuel; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 199239-08-2, GenBank AB008370
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 7732-18-5, Water, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 9000-90-2D, functional fragments, mutants, and fusion products 9032-08-0, ***Glucoamylase***
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 9001-92-7, Proteinase
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(protease, preferably fungal acid protease; processes for producing fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 861915-11-9 861915-31-3 861915-33-5 861915-35-7 861915-37-9 861915-39-1
RL: PRP (Properties)
(unclaimed nucleotide sequence; processes for producing a fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 861915-12-0 861915-13-1 861915-14-2 861915-15-3 861915-16-4
861915-17-5 861915-18-6 861915-19-7 861915-20-0 861915-21-1
861915-22-2 861915-23-3 861915-24-4 861915-25-5 861915-26-6
861915-27-7 861915-28-8 861915-29-9 861915-30-2 861915-32-4
861915-34-6 861915-36-8 861915-38-0 861915-40-4
RL: PRP (Properties)
(unclaimed protein sequence; processes for producing a fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

IT 824951-61-3 824951-62-4 824951-63-5 824951-64-6
RL: PRP (Properties)
(unclaimed sequence; processes for producing a fermentation product, such as ethanol, from milled starch without ***gelatinization*** using ***glucoamylase*** from Athelia rolfsii and acid α -***amylase***)

L12 ANSWER 5 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:493688 HCAPLUS
DOCUMENT NUMBER: 143:42784
TITLE: Expression of granular starch-hydrolyzing glucoamylase from filamentous fungi in Trichoderma for producing glucose syrup from granular starch substrates
INVENTOR(S): Baldwin, Toby L.; Bower, Benjamin S.; Chotani, Gopal K.; Dunn-Coleman, Nigel; Lantero, Oreste, Jr.; Lantz, Suzanne E.; Pepsin, Michael J.; Shetty, Jayarama K.; Strohm, Bruce A.; Wang, Huaming
PATENT ASSIGNEE(S): Genencor International, Inc., USA
SOURCE: PCT Int. Appl., 88 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005052148	A2	20050609	WO 2004-US38713	20041118
WO 2005052148	A3	20050915		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO,

SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2004293789	A1	20050609	AU 2004-293789	20041118
CA 2546659	A1	20050609	CA 2004-2546659	20041118
US 2005136525	A1	20050623	US 2004-991654	20041118
US 2005208623	A1	20050922	US 2004-992187	20041118
EP 1685244	A2	20060802	EP 2004-811428	20041118
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
EP 1698692	A2	20060906	EP 2006-9350	20041118
EP 1698692	A3	20070103		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR, IS, YU				
CN 1875099	A	20061206	CN 2004-80032375	20041118
BR 2004016762	A	20070227	BR 2004-16762	20041118
JP 2007512813	T	20070524	JP 2006-541373	20041118
MX 2006PA05530	A	20060817	MX 2006-PA5530	20060516
US 2007099272	A1	20070503	US 2006-633309	20061204
PRIORITY APPLN. INFO.:			US 2003-524279P	P 20031121
			US 2003-531953P	P 20031222
			US 2004-566358P	P 20040428
			EP 2004-811428	A3 20041118
			US 2004-992187	A1 20041118
			WO 2004-US38713	W 20041118

AB The present invention relates to filamentous fungal host cells and particularly Trichoderma host cells useful for the production of heterologous granular starch hydrolyzing enzymes having ***glucoamylase*** activity (GSHE). Further the invention relates to a method for producing a glucose syrup comprising contacting a granular starch slurry obtained from a granular starch substrate simultaneously with an ***.alpha.-amylase*** and a GSHE at a temperature equal to or below the ***gelatinization*** temperature of the granular starch to obtain a composition of a glucose syrup. More specifically, expression of Humicola grisea thermoidea GSHE gene or Aspergillus awamori kawachi GSHE gene in Trichoderma reesei is reported. Solubilization and hydrolysis of granular cornstarch by the recombinant GSHE is described.

L12 ANSWER 6 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:521833 HCAPLUS
DOCUMENT NUMBER: 143:25617
TITLE: Powdered koji-making method, potato-based koji, and beverages manufactured using the powdered koji
INVENTOR(S): Ago, Shoji; Taketani, Akira
PATENT ASSIGNEE(S): Asahi Breweries, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005151813	A	20050616	JP 2003-390957	20031120
PRIORITY APPLN. INFO.:			JP 2003-390957	20031120

AB The koji-making method involves adding water to starch powder and/or powders comprising potato and/or cereal, mech. mixing the powders with the water, ***gelatinizing*** the resulting water-dispersed powders, and culturing koji mold with the water-dispersed powders. Beverages, e.g., shochu, are manufactured using the powdered koji. The activities of ***glucoamylase***, ***.alpha.-amylase***, and β-glucosidase in sweet potato koji prepared by the method were higher than those in conventional rice koji.

L12 ANSWER 7 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:246958 HCAPLUS
DOCUMENT NUMBER: 140:269985
TITLE: Method for preparing a rice milk by enzymic saccharification
INVENTOR(S): Ravagnani, Vinicio; Sambataro, Diego
PATENT ASSIGNEE(S): Abafoods S.r.l., Italy
SOURCE: Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1400177	A1	20040324	EP 2003-19603	20030904
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1669487	A	20050921	CN 2004-10063970	20040319
PRIORITY APPLN. INFO.:			IT 2002-MO257	A 20020919

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB A method for preparing a rice-based beverage comprises mixing rice with water to enable saccharification (e.g., with non-thermostable enzymes) to a glucose-containing product and stabilization of the product by continuously extracting the portions which have greater mol. weight Thus, starch is ***gelatinized*** at 95° to enable subsequent saccharification with a bacterial ***.alpha.-amylase*** (at 70-85°), followed by use of a second saccharifying enzyme (***glucoamylase*** at 60-70°), insol. residues (fiber and protein) being removed by centrifugation.

L12 ANSWER 8 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:683799 HCAPLUS
DOCUMENT NUMBER: 141:394149
TITLE: Production of α-amylase and glucoamylase by a new isolate of Trichoderma sp. using sorghum starch as a carbon source
AUTHOR(S): Pacheco-Chavez, R. A.; Carvalho, J. C. M.; Tavares, L. C.; Penna, T. C. Vessoni; Converti, A.; Sato, S.
CORPORATE SOURCE: Department of Chemical and Process Engineering, Genoa University, Genoa, 16145, Italy
SOURCE: Engineering in Life Sciences (2004), 4(4), 369-372
CODEN: ELSNAE; ISSN: 1618-0240
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB The aim of this work is to evaluate the performance of a new Trichoderma sp. isolate to produce extracellular ***.alpha.-amylase*** and ***glucoamylase*** from raw sorghum starch. To reduce the costs of starch saccharification and the consumption of amylolytic enzymes, this microorganism has been used for the first time in cultivations using such a carbon source without any prior ***gelatinization***. Incubation of this microorganism at 28 °C, 180 rpm and starting pH 5.3 ensured ***.alpha.-amylase*** and ***glucoamylase*** activities of 258±2.8 and 83±1.2 U/L after 24 and 120 h, resp., and maximum productivities of 11±0.9 and 2.3±0.2 U/L h, after 24 h. In general, ***.alpha.-amylase*** was produced 4-5 times more quickly than ***glucoamylase*** and no less than 78 % of starting sorghum starch was hydrolyzed, releasing 49±7 mg/L total reducing sugars and

28±3 mg/L glucose. It is the first time that an isolate of the Trichoderma genus was found to express such amylolytic activities using raw sorghum starch. The ability of this microorganism to overproduce amylases could be usefully exploited for direct saccharification of other raw starches using different nitrogen sources.

L12 ANSWER 9 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:638143 HCAPLUS
DOCUMENT NUMBER: 141:348864
TITLE: Production of α-amylase and glucoamylase from different starches by a new Trichoderma sp. isolate
AUTHOR(S): Chavez, R. A. Pacheco; Carvalho, J. C. M.; Converti, A.; Perego, P.; Tavares, L. C.; Sato, Sunao
CORPORATE SOURCE: Department of Biochemical and Pharmaceutical Technology, University of Sao Paulo, Sao Paulo, 05508-900, Brazil
SOURCE: Annals of Microbiology (Milano, Italy) (2004), 54(2), 169-180
CODEN: AMNIC7; ISSN: 1590-4261
PUBLISHER: University of Milan, Dep of Food Science and Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

AB Different carbon sources were tested for the simultaneous cultivation and production of extracellular ***.alpha.-amylase*** and ***glucoamylase*** by a new Trichoderma sp. isolate, namely sorghum, soluble (potato), corn, and cassava starches as well as maltose. Although maltose behaved better than the other carbon sources in terms of ***.alpha.-amylase*** activity (about 28,000 U/L) and productivity (about 390 U/L·h), cassava and corn starches ensured much higher ***glucoamylase*** activities (17,000-18,000 U/L) and productivities close to that obtained with maltose (about 100 U/L·h). Because of its ability to produce either ***.alpha.-amylase*** or ***glucoamylase***, the Trichoderma isolate used in this study promises to be advantageously used in a direct process for raw starch saccharification without preliminary ***gelatinization***.

L12 ANSWER 10 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:656930 HCAPLUS
DOCUMENT NUMBER: 139:196392
TITLE: Use of cyclodextrin glycosyltransferase, glucoamylase and α-amylase for generating soluble starch hydrolysates for synthesis of high fructose starch-based syrups, fuel and potable ethanol
INVENTOR(S): Norman, Barrie Edmund; Vikso-Nielsen, Anders; Olsen, Hans Sejr; Pedersen, Sven
PATENT ASSIGNEE(S): Novozymes A/S, Den.
SOURCE: PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003068976	A2	20030821	WO 2003-DK84	20030210
WO 2003068976	A3	20031224		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2474082	A1	20030821	CA 2003-2474082	20030210
AU 2003205556	A1	20030904	AU 2003-205556	20030210
EP 1476556	A2	20041117	EP 2003-702374	20030210
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
US 2005107332	A1	20050519	US 2003-504543	20030210
CN 1633503	A	20050629	CN 2003-803986	20030210
MX 2004PA07811	A	20041015	MX 2004-PA7811	20040812

PRIORITY APPLN. INFO.:

DK 2002-227	A	20020214
DK 2002-1291	A	20020902
WO 2003-DK84	W	20030210

AB The present invention relates to a process for enzymic hydrolysis of granular starch into a soluble starch hydrolyzate at a temperature below the initial ***gelatinization*** temperature of said granular starch. In particular, it relates to the use of cyclodextrin glycosyltransferase, ***glucoamylase***, acid fungal ***.alpha.-amylase*** and ***.alpha.-amylase*** for generating soluble starch hydrolyzates for synthesis of high fructose starch-based syrups, fuel and potable ethanol.

L12 ANSWER 11 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:99895 HCAPLUS
DOCUMENT NUMBER: 140:405875
TITLE: Effect of starch degradation enzymes on the retrogradation of Korean rice cakes
AUTHOR(S): Song, Jae-Chul; Park, Hyun-Jeong
CORPORATE SOURCE: College of Human Ecology, University of Ulsan, Ulsan, 680-749, S. Korea
SOURCE: Han'guk Sikp'um Yongyang Kwahak Hoechi (2003), 32(8), 1262-1269
CODEN: HSYHFB; ISSN: 1226-3311
PUBLISHER: Korean Society of Food Science and Nutrition
DOCUMENT TYPE: Journal
LANGUAGE: Korean

AB In this study, enzymes were investigated as an antistaling agent for a Korean rice cake. Thermograms by a DSC demonstrated that the ***gelatinization***-onset temperature of the Korean rice cake was at its lowest temperature of 71.1° with the GP (***glucoamylase*** + pullulanase) treatment, followed by β-amylase and ***.alpha.-amylase***. The ***gelatinization*** peak temperature of the Korean rice cake with enzyme treatment was relatively lower compared to the control. Furthermore, the Korean rice cake with GP treatment showed the lowest peak temperature Melting enthalpy of the Korean rice cake increased with the enzyme treatment, with ***.alpha.-amylase***, followed by β-amylase and GP. Melting enthalpy of the Korean rice cake with GP treatment was significantly lower compared to the β- and ***.alpha.-amylase*** treatment. Recrystallinity in the case of GP treatment was also significantly lower than control. The range of Avrami exponent (n) was 0.90.apprx.1.20 and the time constant of retrogradation (1/k) of the Korean rice cake crystalline decreased in the following order: GP, β-, ***.alpha.-amylase*** and control. Textural characteristics of the Korean rice cake with enzyme treatment differed greatly from that of control. The L* values of all the Korean rice cakes made without β-amylase decreased and the a* values were significantly different at $p < 0.05$. The GP treatment altered the b* value toward blue color, whereas β- and ***.alpha.-***

amylase changed to the direction to yellow color. In sensory evaluation, the Korean rice cake with enzyme treatment showed higher evaluation compared to control.

L12 ANSWER 12 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:978809 HCAPLUS
DOCUMENT NUMBER: 140:234697
TITLE: Amylolytic activity and properties of starch granules from the giant embryonic rices
AUTHOR(S): Kang, Mi-Young; Lee, Yun-Ri; Nam, Seok Hyun
CORPORATE SOURCE: Department of Food Science and Nutrition, Kyungpook National University, Taegu, 702-701, S. Korea
SOURCE: Han'guk Nonghwa Hakhoechi (2003), 46(3), 189-194
CODEN: JKACA7; ISSN: 0368-2897
PUBLISHER: Korean Society of Agricultural Chemistry and Biotechnology
DOCUMENT TYPE: Journal
LANGUAGE: Korean
AB Rice seeds of 4 cultivars including Whachung-giant embryonic rice and Nampung giant embryonic rice, as a group of the non-waxy rice cultivars, and Shinsunchal-giant embryonic rice and Whachungchal-giant embryonic rice, as that of the waxy rice cultivars, were germinated at 27° for 3 days to compare the changes in some physicochem. properties of the starch granules and the starch-hydrolyzing enzyme activities during germination, resp. ***.alpha.-Amylase*** activity of rices germinated for 3 days was higher than that of malt. Especially, Whachung-giant embryonic rice and Shinsunchal-giant embryonic rice were greater in activity than other rice cultivars and possessed the activities double that of malt. In contrast, β-amylase of germinated rice was considerably less active than malt, although the giant embryonic rice group showed prevalent activity as compared to the normal rice group. With the starch granules, the amount of long glucose chains from amylose mols. were reduced in the non-waxy type giant embryonic rices, while the chain length increase was found in the waxy type giant embryonic rices. For the distribution profile of the glucose chain length from amylopectin mols., it was observed that the chain length with DP ranged 33 to 66 and 14 to 32 increased with the decreasing rate of that above 67 and below 13 regardless of starch waxiness. With non-waxy type of giant embryonic rices, susceptibility for ***glucoamylase*** were found to reduce along with germination, however, increase in susceptibility was observed with waxy rice types. In addition, the authors found the reduction in both initiation and termination temperature, and enthalpy for ***gelatinization***.

L12 ANSWER 13 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:775622 HCAPLUS
DOCUMENT NUMBER: 139:380246
TITLE: Examination of degrading enzymes in measurement of gelatinization degree
AUTHOR(S): Ikeda, Hideki; Gunji, Masayuki; Takayama, Yoshinori; Tomita, Kenji
CORPORATE SOURCE: Yokohama Customs Laboratory, Yokohama, 231-8401, Japan
SOURCE: Kanzei Chuo Bunsekishoho (2002), 42, 41-47
CODEN: KCBSDI; ISSN: 0286-1933
PUBLISHER: Zaimusho Kanzei Chuo Bunsekisho
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
IT 9000-90-2, α -***Amylase***
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(co-use with ***glucoamylase***; examination of degrading enzymes in measurement of ***gelatinization*** degree)
IT 9032-08-0, ***Glucoamylase***
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(co-use with α -***amylase***; examination of degrading enzymes in measurement of ***gelatinization*** degree)

L12 ANSWER 14 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:889074 HCAPLUS
DOCUMENT NUMBER: 136:199277
TITLE: Physicochemical properties of starches from flavored glutinous rice varieties
AUTHOR(S): Choi, Young-Hee; Kim, Kwang-Ho; Kang, Mi-Young
CORPORATE SOURCE: Dept. of Food Science and Nutrition, Kyungpook National University, Taegu, 702-701, S. Korea
SOURCE: Han'guk Sikp'um Yongyang Kwahak Hoechi (2001), 30(5), 765-769
CODEN: HSYHFB; ISSN: 1226-3311
PUBLISHER: Korean Society of Food Science and Nutrition
DOCUMENT TYPE: Journal
LANGUAGE: Korean
AB Starches of flavored glutinous rice were analyzed by using SEM and differential scanning calorimetry (DSC) and starch granule susceptibility to hydrolysis was tested using 15% H2SO4, ***glucoamylase*** and ***alpha.-amylase***. Shape of starch granules from flavored glutinous rice varieties was polygonal and the size was 4-6 μm in diameter According to DSC, glutinous rice starch showed the onset temperature (To) range of 59.8.apprx.62.5° and KR92021-B-B-42-3-B and KR92021-B-B-165-1-B showed higher enthalpy (ΔH) on ***gelatinization*** than others. Starches from KR92021-B-B-5-2-B and KR92021-B-B-42-3-B showed lower hydrolysis rate by 15% H2SO4 than KR92021-B-B-165-1-B. KR92021-B-B-5-2-B showed higher degree of hydrolysis by ***glucoamylase*** and ***alpha.-amylase*** than the others.

L12 ANSWER 15 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 1
ACCESSION NUMBER: 2001:463175 BIOSIS
DOCUMENT NUMBER: PREV200100463175
TITLE: Anaerobic fermentation of gelatinized sago starch-derived sugars to acetone-1-butanol-ethanol solvent by Clostridium acetobutylicum.
AUTHOR(S): Madihah, M. S.; Ariff, A. B. [Reprint author]; Khalil, M. S.; Suraini, A. A.; Karim, M. I. A.
CORPORATE SOURCE: Department of Biotechnology, Faculty of Food Science and Biotechnology, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia
arbarif@fsb.upm.edu.my
SOURCE: Folia Microbiologica, (2001) Vol. 46, No. 3, pp. 197-204. print.
CODEN: FOMIAZ. ISSN: 0015-5632.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 3 Oct 2001
Last Updated on STN: 23 Feb 2002
AB . . and their mixture derived from enzymic hydrolysis of sago starch by Clostridium acetobutylicum showed that the use of 30 g/L ***gelatinized*** sago starch as the sole carbon source produced 11.2 g/L total solvent, i.e. 1.5-2 times more than with pure maltose or glucose used as carbon sources. Enzymic pretreatment of ***gelatinized*** sago starch yielding maltose and glucose hydrolyzates prior to the fermentation did not improve solvent production as compared to direct fermentation of ***gelatinized*** sago starch. The solvent yield of direct ***gelatinized*** sago starch fermentation depended on the activity and stability of amylolytic enzymes produced during the fermentation. The pH optima for ***alpha-amylase*** and ***glucoamylase*** were found to be at 5.3 and 4.0-4.4, respectively. ***alpha-Amylase*** showed a broad pH stability profile,

retaining more than 80% of its maximum activity at pH 3.0-8.0 after a 1-d incubation at 37 degreeC. Since C. acetobutylicum ***alpha-amylase*** has a high activity and stability at low pH, this strain can potentially be employed in a one-step direct solvent-yielding fermentation of sago starch. However, the C. acetobutylicum ***glucoamylase*** was only stable at pH 4-5, maintaining more than 90% of its maximum activity after a 1-d incubation at 37. . .

L12 ANSWER 16 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 2

ACCESSION NUMBER: 2000:204816 BIOSIS
DOCUMENT NUMBER: PREV200000204816
TITLE: Enzymatic treatment of rice bran to improve processing.
AUTHOR(S): Hernandez, N.; Rodriguez-Alegria, M. E.; Gonzalez, F.; Lopez-Munguia, A. [Reprint author]
CORPORATE SOURCE: Instituto de Biotecnologia, UNAM, Cuernavaca, MOR, 62271, Mexico
SOURCE: Journal of the American Oil Chemists' Society, (Feb., 2000) Vol. 77, No. 2, pp. 177-180. print.
CODEN: JAOCA7. ISSN: 0003-021X.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 24 May 2000
Last Updated on STN: 5 Jan 2002

AB. . . to solvent extraction or pressing. A thermal treatment of rice bran is first applied to deactivate lipase, but also to ***gelatinize*** starch previous to reaction with ***alpha-amylase***. This is followed by a saccharifying step with ***glucoamylase*** to produce glucose (28 g/100 g of rice bran treated), while the residual paste, 66.7% of the original bran, may. . . the defined extraction conditions using hexane, yields of oil are 5% higher when rice bran has been previously treated with ***alpha-amylase***.

L12 ANSWER 17 OF 69 SCISEARCH COPYRIGHT (c) 2007 The Thomson Corporation on STN

ACCESSION NUMBER: 2000:568167 SCISEARCH
THE GENUINE ARTICLE: 334RW
TITLE: Degradation of starchy food material by thermal analysis
AUTHOR: Aggarwal P (Reprint); Dollimore D
CORPORATE SOURCE: Univ Toledo, Dept Chem, Toledo, OH 43606 USA (Reprint)
COUNTRY OF AUTHOR: USA
SOURCE: THERMOCHIMICA ACTA, (14 AUG 2000) Vol. 357, pp. 57-63. ISSN: 0040-6031.
PUBLISHER: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 24
ENTRY DATE: Entered STN: 2000
Last Updated on STN: 2000
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

STP KeyWords Plus (R): ***ALPHA-AMYLASE***; A-TYPE; ***GELATINIZATION***; ***GLUCOAMYLASE***; MICROSCOPY; HYDROLYSIS; BACTERIAL; GRANULES

L12 ANSWER 18 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 3

ACCESSION NUMBER: 1999:227419 BIOSIS
DOCUMENT NUMBER: PREV199900227419
TITLE: Optimal preparation of saccharified rice solution for Bifidobacterium fermentation.
AUTHOR(S): Lee, Ju-Yeon; Mok, Chulkyoon [Reprint author]; Park, Jong-Hyun; Chang, Hak-Gil; Koo, Dong-Joo
CORPORATE SOURCE: Department of Food and Bioengineering, Kyungwon University, San 65, Bokjung-dong Sujung-ku, Sungnam, Kyunggi-do, 461-701, South Korea
SOURCE: Hanguk Nongwhahak Hoechi, (Dec., 1998) Vol. 41, No. 7, pp. 527-532. print.
CODEN: JKACA7. ISSN: 0368-2897.
DOCUMENT TYPE: Article
LANGUAGE: Korean
ENTRY DATE: Entered STN: 17 Jun 1999
Last Updated on STN: 17 Jun 1999

AB. . . Grinding for 30 seconds by an impact mill was more efficient than any other grinding schemes tested. The preheating before ***gelatinization*** showed a positive effect for efficient saccharification, and its optimal conditions were at 60degreeC for 45 min. The optimum ***gelatinization*** conditions were at 100degreeC for 40 min. The optimum levels of enzymes for saccharification of rice were 0.135 unit/g rice powder for ***alpha-amylase*** and 3.375 unit/g rice powder for ***glucoamylase***, respectively. The physico-chemical properties of the fermented product by a fastidious Bifidobacterium showed a great potential for a functional rice. . .

L12 ANSWER 19 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 4

ACCESSION NUMBER: 1998:447011 BIOSIS
DOCUMENT NUMBER: PREV199800447011
TITLE: Kojic acid production by Aspergillus flavus using gelatinized and hydrolyzed sao starch as carbon sources.
AUTHOR(S): Rosfarizan, M. [Reprint author]; Ariff, A. B.; Hassan, M. A.; Karim, M. I. A.
CORPORATE SOURCE: Dep. Biotechnol., Univ. Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia
SOURCE: Folia Microbiologica, (1998) Vol. 43, No. 5, pp. 459-464. print.
CODEN: FOMIAZ. ISSN: 0015-5632.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 21 Oct 1998
Last Updated on STN: 21 Oct 1998

AB Direct conversion of ***gelatinized*** sago starch into kojic acid by Aspergillus flavus strain having amylolytic enzymes was carried out at two different scales of. . . starch as carbon sources. During kojic acid fermentation of starch, starch was first hydrolyzed to glucose by the action of ***alpha-amylase*** and ***glucoamylase*** during active growth phase. The glucose remaining during the production phase (non-growing phase) was then converted to kojic acid. Kojic. . .

L12 ANSWER 20 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 5

ACCESSION NUMBER: 1998:486371 BIOSIS
DOCUMENT NUMBER: PREV199800486371
TITLE: Comparative study of hydrolysis of various starches by alpha-amylase and glucoamylase in PEG-dextran and PEG-substrate aqueous two phase systems.
AUTHOR(S): Karakatsanis, A.; Liakopoulou-Kyriakides, M.
CORPORATE SOURCE: Aristotle Univ. Thessaloniki, Dep. Chem. Eng., Sect. Chem., 54006 Thessaloniki, Greece
SOURCE: Starch, (Aug., 1998) Vol. 50, No. 8, pp. 349-353. print.
CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 5 Nov 1998
Last Updated on STN: 5 Nov 1998

AB Various crude starches were hydrolyzed by the synergistic action of ***alpha-amylase*** and ***glucoamylase*** in PEG-dextran and PEG-substrate aqueous two phase systems. The hydrolysis products were

determined, at different temperatures, by the chromatometric method. . . formation of two phases, is that the substitution of the dextran polymer decreases remarkably the cost of the reaction. Prior ***gelatinization*** of the starch used, gives higher yields of glucose than in the case of non ***gelatinized*** starch and the separation of the phases is satisfactory.

L12 ANSWER 21 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 6
ACCESSION NUMBER: 1998:390578 BIOSIS
DOCUMENT NUMBER: PREV199800390578
TITLE: Large scale preparation of crystalline glucose from raw starch in corn flour.
AUTHOR(S): Arasaratnam, Vasanthy [Reprint author]; Sritharan, Kirubahary; Nithiyanantharajha, Navaratnam; Balasubramaniam, Kandiah
CORPORATE SOURCE: Dep. Biochem., Fac. Med., Univ. Jaffna, Kokuvil, Sri Lanka
SOURCE: Starch, (June, 1998) Vol. 50, No. 6, pp. 264-266. print.
CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 10 Sep 1998
Last Updated on STN: 10 Sep 1998
AB. . . Further, purification costs energy and time. To avoid these, starch in corn flour was hydrolyzed by the synergistic action of ***alpha-amylase*** and ***glucoamylase*** while avoiding high temperature ***gelatinization*** and liquefaction processes. When 1600 g (16%, W/W suspension) and 4000 g (40%, W/W suspension) corn flour was hydrolyzed and. . .

L12 ANSWER 22 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 7
ACCESSION NUMBER: 1998:226827 BIOSIS
DOCUMENT NUMBER: PREV199800226827
TITLE: Enzymic digestibility of reduced-pressurized, heat-moisture treated starch.
AUTHOR(S): Maruta, Isao; Kurahashi, Yoshiki; Takano, Ryo; Hayashi, Kaeko; Kudo, Ken-Ichi; Hara, Saburo [Reprint author]
CORPORATE SOURCE: Dep. Chem. Mater. Technol., Fac. Eng. Design, Kyoto Inst. Technol., Matsugasaki, Sakyo-ku, Kyoto 606, Japan
SOURCE: Food Chemistry, (Jan.-Feb., 1998) Vol. 61, No. 1-2, pp. 163-165. print.
CODEN: FOCHDJ. ISSN: 0308-8146.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 20 May 1998
Last Updated on STN: 20 May 1998
AB The digestibility of the reduced-pressurized heat-moisture treated corn starches by ***alpha-amylase*** and ***glucoamylase*** was studied. By the treatment, regular and waxy corn starch granules were well digested by ***alpha-amylase*** without ***gelatinization***, while the digestibility of the high amylose corn starch was reduced. Both regular and waxy corn starches, regardless of the treatment, were digested well by enzymes under the ***gelatinized*** condition. However, a drastic increase of indigestible portion was observed in the high amylose corn starch. Methylation analysis of the. . .

L12 ANSWER 23 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 8
ACCESSION NUMBER: 1998:4827 BIOSIS
DOCUMENT NUMBER: PREV199800004827
TITLE: Use of enzymes for the separation of protein from rice flour.
AUTHOR(S): Shih, Frederick F. [Reprint author]; Daigle, Kim
CORPORATE SOURCE: Southern Regional Research Center, PO Box 19687, New Orleans, LA 70179, USA
SOURCE: Cereal Chemistry, (July-Aug., 1997) Vol. 74, No. 4, pp. 437-441. print.
CODEN: CECHAF. ISSN: 0009-0352.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 23 Dec 1997
Last Updated on STN: 23 Dec 1997
AB When rice flour was treated with heat stable ***alpha-amylases***, the effectiveness of protein separation increased with increased temperature. pending on the enzyme, treatment at 90degreeC for 45 min resulted in protein contents of 47-65% for the insoluble fraction. Prior ***gelatinization*** enhanced the effectiveness of the enzyme reaction but was undesirable cause the increased viscosity and gelation could cause difficulties in the processing operation. Follow-up treatment with other carbohydrate-hydrolyzing enzymes, such as ***glucoamylase*** , cellulose, and hemicellulase further increased the protein content up to 76% for the insoluble fraction. The subunit structure of the. . .

L12 ANSWER 24 OF 69 SCISEARCH COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1997:900108 SCISEARCH
THE GENUINE ARTICLE: YJ744
TITLE: Towards an understanding of starch granule structure and hydrolysis
AUTHOR: Oates C G (Reprint)
CORPORATE SOURCE: NATL UNIV SINGAPORE, DEPT BIOCHEM, 10 KENT RIDGE CRESCENT, SINGAPORE 119260, SINGAPORE (Reprint)
COUNTRY OF AUTHOR: SINGAPORE
SOURCE: TRENDS IN FOOD SCIENCE & TECHNOLOGY, (NOV 1997) Vol. 8, No. 11, pp. 375-382.
ISSN: 0924-2244.
PUBLISHER: ELSEVIER SCIENCE LONDON, 84 THEOBALDS RD, LONDON WC1X 8RR, ENGLAND.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 50
ENTRY DATE: Entered STN: 1997
Last Updated on STN: 1997
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS
STP KeyWords Plus (R): ***ALPHA-AMYLASE***; POTATO STARCH; RAW-STARCH; AMYLOSE; DEGRADATION; ***GELATINIZATION***; SUSCEPTIBILITY; CARBOHYDRATE; ORGANIZATION; ***GLUCOAMYLASE***

L12 ANSWER 25 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:20092 HCAPLUS
DOCUMENT NUMBER: 128:179580
TITLE: Effect of annealing on the hydrolysis of sago starch granules
AUTHOR(S): Wang, W. J.; Powell, A. D.; Oates, C. G.
CORPORATE SOURCE: Department of Biochemistry, National University of Singapore, Singapore, 0511, Singapore
SOURCE: Carbohydrate Polymers (1997), 33(2/3), 195-202
CODEN: CAPOD8; ISSN: 0144-8617
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
AB Sago starch annealed at varying temps., time intervals and pH was used to study granule hydrolysis by a ***glucoamylase*** (AMG) and . ***alpha.-amylase*** (Termamyl) mixture DSC indicated that

there was a relation between the extent of annealing and starch granule hydrolysis. The enthalpy of ***gelatinization*** of annealed starch granules remained unchanged, suggesting that no ***gelatinization*** had occurred. The degree of hydrolysis was increased and the granule degradation pattern was altered, from surface erosion to preferential digging of the internal regions of the granule. Sections of the hydrolyzed granule residues revealed that enzymes attacked from one point on sufficiently annealed granules, and that after extensive hydrolysis, only an empty shell remained.

L12 ANSWER 26 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 9
ACCESSION NUMBER: 1997:313782 BIOSIS
DOCUMENT NUMBER: PREV199799604270
TITLE: Hydrolysis of various starches by the synergistic action of alpha-amylase and glucoamylase in aqueous two phase impeller agitated systems.
AUTHOR(S): Karakatsanis, A.; Liakopoulou-Kyriakides, M. [Reprint author]; Stamatoudis, M.
CORPORATE SOURCE: Dep. Chemical Engineering, Section Chemistry, 54006 Thesslaniki, Greece
SOURCE: Starch, (1997) Vol. 49, No. 5, pp. 194-199. CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Jul 1997
Last Updated on STN: 26 Jul 1997
AB Various starches were hydrolyzed by the combination of ***alpha-amylase*** and ***glucoamylase*** in aqueous two phase impeller agitated systems. The reaction products were determined by the chromatometric method of phenol-sulfuric acid and by HPLC. The effect of temperature on glucose production was studied for these starches in ***gelatinized*** and non ***gelatinized*** form. It was found that crude corn starch (not in the ***gelatinized*** form) at 150 rpm and 40 degree C gives very good results in terms of glucose concentration.
IT Miscellaneous Descriptors
chemical industry; ***ALPHA-AMYLASE***; AQUEOUS PHASE IMPELLER AGITATED SYSTEMS; BIOBUSINESS; BIOPROCESS ENGINEERING; ***GELATINIZED***; ***GLUCOAMYLASE***; GLUCOSE; HYDROLYSIS; NON-***GELATINIZED***; PRODUCTION; STARCH

L12 ANSWER 27 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 10
ACCESSION NUMBER: 1996:186412 BIOSIS
DOCUMENT NUMBER: PREV199698742541
TITLE: Legume and cereal starches: Why differences in digestibility? Part II. Isolation and characterization of starches from rice (O. sativa) and ragi (finger millet, E. coracana).
AUTHOR(S): Madhusudhan, Basavaraj; Tharanathan, Rudrapatnam N. [Reprint author]
CORPORATE SOURCE: Dep. Biochem. Nutr., Central Food Technological Res. Inst., Mysore-570 013, India
SOURCE: Carbohydrate Polymers, (1995) Vol. 28, No. 2, pp. 153-158. CODEN: CAPOD8. ISSN: 0144-8617.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 29 Apr 1996
Last Updated on STN: 29 Apr 1996
AB. . . viscosity increase was minimal. In vitro digestibility studies showed rice starch to be more digestible; in the native state, pancreatic ***alpha-amylase*** digested rice starch I to apprx 60% and ragi starch I to apprx 56%; whereas in the ***gelatinized*** state, ***glucoamylase*** digested the former to apprx 88% and the latter to apprx 70%.

L12 ANSWER 28 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1996:592 HCAPLUS
DOCUMENT NUMBER: 124:149136
TITLE: Study on the performance of solid-supported and soluble α-amylase and glucoamylase for the enzymic hydrolysis of modified starch
AUTHOR(S): Popa, Iuliana; Beldie, Cameluta
CORPORATE SOURCE: "Petru Poni" Institute Macromolecular Chemistry, Iasi, 6600, Rom.
SOURCE: Progress in Catalysis (1995), 4(1), 39-46 CODEN: POCTEU; ISSN: 1220-8698
PUBLISHER: Zecasin
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A study of enzymic modification of Na-phosphate starch in different conditions was carried out. The ***gelatinized*** modified starch was subjected to activation with free and immobilized ***.alpha.-amylase***. The kinetic and catalytic parameters of the maltodextrin hydrolysis process in the presence of both free and immobilized ***glucoamylase*** were evaluated. The influence of competitional diffusion phenomena, which take place in the case of immobilized enzymes, was considered. Supports obtained at different degrees of crosslinking with glutaraldehyde were also used.

L12 ANSWER 29 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 11
ACCESSION NUMBER: 1995:69237 BIOSIS
DOCUMENT NUMBER: PREV199598083537
TITLE: Purification and properties of the raw starch digesting amylase from Penicillium brunneum Number 24.
AUTHOR(S): Haska, Nadirman; Ohta, Yoshiyuki [Reprint author]
CORPORATE SOURCE: Lab. Microbial Biochem., Fac. Applied Biol. Sci., Hiroshima Univ., 1-4-4 Kagamiyama, Higashi-Hiroshima 724, Hiroshima, Japan
SOURCE: Starch, (1994) Vol. 46, No. 12, pp. 480-485. CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 8 Feb 1995
Last Updated on STN: 14 Mar 1995
AB. . . starch digesting amylase was obtained from Penicillium brunneum No. 24. The crude enzyme from this strain contains carboxymethylcellulase (CMC-ase), avicelase, ***alpha-amylase*** and alpha-glucosidase. Affinity chromatography (alpha-cyclodextrin-Sepharose 6B) of the enzyme after ammonium sulfate fractionation, Toyopearl HW-55F gel filtration, DEAE-Sephadex A-50 and DEAE-cellulose chromatographies fractionation steps, resulted in a homogeneous ***glucoamylase***. SDS-polyacrylamide gel electrophoresis of purified enzyme showed a single band, and a molecular weight of 80,000 for the native ***glucoamylase*** from Penicillium brunneum No. 24 was observed. After modification of the native ***glucoamylase*** with subtilisin, the molecular weight was reduced to 76,000. It lost the ability to digest and adsorb onto raw starches. However, its ability to digest ***gelatinized*** starches was preserved.

L12 ANSWER 30 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 12
ACCESSION NUMBER: 1993:387449 BIOSIS
DOCUMENT NUMBER: PREV199396062749
TITLE: Structure of tapioca pearls compared to starch noodles from mung beans.
AUTHOR(S): Xu, Ansui [Reprint author]; Seib, Paul A.

CORPORATE SOURCE: Am. Maize-Prod. Co., Hammond, IN, USA
SOURCE: Cereal Chemistry, (1993) Vol. 70, No. 4, pp. 463-470.
CODEN: CECHAF. ISSN: 0009-0352.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 23 Aug 1993
Last Updated on STN: 28 Sep 1993

AB Commercial tapioca pearls contain approximately 60% ***gelatinized*** starch, as determined by differential scanning calorimetry and ***glucoamylase*** digestibility. Exhaustive digestions showed that 2, 5, and 6% of cooked tapioca pearls were resistant to ***alpha-amylase***, acid (1M HCl at 35 degree C), and to a combination of isoamylase and beta-amylase, respectively, whereas digestion of cooked. . . of resistant residues. All the resistant residues gave the B-polymorphic X-ray pattern typical of retrograded starch. At 75% moisture, the ***alpha-amylase***-resistant residue did not melt below 147 degree C, whereas the acid-resistant residue melted at 128 degree C (T-p), and the isoamylase and beta-amylase-resistant residue melted at 92 degree C (T-p). Size-exclusion chromatography showed that the ***alpha-amylase***-resistant residues contained unit chains with a peak at a number-average degree of polymerization (DP-n) of 33-37, and the acid-resistant residues. . .

L12 ANSWER 31 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:558571 HCAPLUS
DOCUMENT NUMBER: 119:158571
TITLE: Characteristic change of various starch granules by enzymatic treatment. I. Characteristic change of rice starch granules by enzymatic treatment
AUTHOR(S): Fukai, Yohichi; Takaki, Etsuko; Kobayashi, Shoichi
CORPORATE SOURCE: Agric. Technol. Inst. Nagano Farmers' Fed., Suzaka, 382, Japan
SOURCE: Denpun Kagaku (1993), 40(3), 263-9
CODEN: DPNKAV; ISSN: 0021-5406
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB Rice starch granules were treated with .***alpha***.-***amylase*** , ***glucoamylase***, and β-amylase under various conditions and changes in the characteristics of the starch granules due to enzyme treatments were investigated. ***Glucoamylase*** and .***alpha***.-***amylase*** degraded rice starch granules and made many holes in their surfaces, whereas, β-amylase had little degrading effect. From observations by scanning electromicroscopy, it was found that the holes made by .***alpha***.-***amylase*** were large and deep. Also β-amylase made deeper holes than those of . ***alpha***.-***amylase***. The number and size of the holes increased with the degree of the enzymic degradation The starch granules were treated by .***alpha***.-***amylase*** until the degree of degradation reached the range of 0.5.apprx.3.0%, and then, the suspension of the granules was subjected to a micro-viscog. anal. The amount of .***alpha***.-***amylase*** adsorbed on the surface of the starch granule was 0.36-4.8 IU/g over the range of degradation The starch granules adsorbing the enzymes were ***gelatinized*** and yielded a thin paste. However, no marked change in the rheol. properties of the starch granules treated with β-amylase or ***glucoamylase*** was observed even when the degradation was large, when compared with those of the granules prior to treatment.

L12 ANSWER 32 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:429134 HCAPLUS
DOCUMENT NUMBER: 117:29134
TITLE: Preparation of cereal starch hydrolyzates containing at least 95% glucose
INVENTOR(S): Anger, Horst; Richter, Manfred; Kettlitz, Bernd; Schirner, Rolf; Haeusler, Gerhard; Roick, Thomas
PATENT ASSIGNEE(S): Zentralinstitut fuer Ernaehrung, Germany
SOURCE: Ger. (East), 5 pp.
CODEN: GEXXA8
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DD 298431	A5	19920220	DD 1989-332057	19890824
PRIORITY APPLN. INFO.:			DD 1989-332057	19890824

AB In the title process, giving products for food and tech. use, aqueous suspensions of 20-30% starch are treated with ***glucoamylase*** (I) and small amts. of .***alpha***.-***amylase*** (II) at pH 3.5-5.5 and temps. ≤3° above the ***gelatinization*** temperature of the starch used for 12-96 h and the hydrolyzate is separated from unreacted starch. Stirring 500 g aqueous slurry of 146 g rye starch (85.6% dry solids) with 50 mg NaHSO3, 10 mg bacterial II (17,910 units/g), and 1.6 mL I from Endomycopsis bispora (2863 units/mL) at pH 5 and 54° for 48 h, centrifuging, and washing the solids with H2O gave an 82.1% solution of hydrolyzate containing glucose 95.3, disaccharides 1.9, and 1.1% oligosaccharides (based on solids).

L12 ANSWER 33 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 13
ACCESSION NUMBER: 1993:79668 HCAPLUS
DOCUMENT NUMBER: 118:79668
TITLE: Kinetics of enzymic hydrolysis of cassava flour starch - optimization and modelling
AUTHOR(S): Waliszweski, Kryzsztof N.; Garcia Alvarado, Miguel; De la Cruz Medina, Javier
CORPORATE SOURCE: Inst, Technol., Veracruz, Mex.
SOURCE: International Journal of Food Science and Technology (1992), 27(4), 465-72
CODEN: IJFTEZ; ISSN: 0950-5423
DOCUMENT TYPE: Journal
LANGUAGE: English

AB This study was conducted to model the kinetics of cassava flour hydrolysis by Miles Taka-Therm L-170 .***alpha***.-***amylase*** and Diazyme L-200 ***glucoamylase*** to produce glucose syrup. Maximum starch concentration was 33% due to a controlled process of flour ***gelatinization*** by gradual temperature increase, and parallel starch hydrolysis by thermostable ***alpha***.-***amylase*** activity, preventing excess viscosity. The time of hydrolysis was two and half hours of .***alpha***.-***amylase*** activity and 36 h of ***glucoamylase*** activity with the final yield of 90-93% of glucose. Exponential hyperbolic models were obtained to predict the kinetics of hydrolysis by both amylase and ***glucoamylase***, with a generalized correlation coefficient >0.94.

L12 ANSWER 34 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:424906 HCAPLUS
DOCUMENT NUMBER: 117:24906
TITLE: Twin-screw extrusion cooker as a bioreactor for starch processing
AUTHOR(S): Linko, Pekka
CORPORATE SOURCE: Helsinki Univ. Technol., Espoo, Finland
SOURCE: Food Science and Technology (New York, NY, United States) (1992), 49(Food Extrusion Sci. Technol.), 335-44
CODEN: FSTEEM; ISSN: 0891-8961
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Most work described was done either by a Clextral BC 45 or with a Werner and Pfleiderer Continua 58 twin-screw extruder. The length of the screws

in the former was 600 mm with 50 mm reverse pitch elements at the die end, and in the latter, 1222.5 mm with 75 mm reverse screw elements were placed at 470 mm distance for efficient starch ***gelatinization***, and 3 short mixing elements at 590 mm, 835 mm, and 1080 mm distance from the beginning. The feed rate was kept constant at about 12 kg/h (d.m.) and 30 kg/h (d.m.), resp. Industrial grade barley and wheat starch, and milled whole barley and oats were used as raw material. Thermostable Bacillus licheniformis ***.alpha.-amylase*** Termamyl was used for liquefaction, and either Aspergillus niger ***glucoamylase*** 150L or barley β-amylase (ABM 1500L) and Klebsiella aerogenes pullulanase (ABM pulluzyme S 2000) were used for saccharification. The state of the are in the novel concept of using a twin-screw extrusion cooker as a continuous bioreactor in starch processing is presented.

L12 ANSWER 35 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:253761 HCAPLUS
DOCUMENT NUMBER: 118:253761
TITLE: Properties of α-amylase and glucoamylase from Aspergillus awamori
AUTHOR(S): Yasuda, Masaki; Yamada, Takeshi; Ishihara, Masanobu; Toyama, Seizen
CORPORATE SOURCE: Coll. Agric., Univ. Ryukyus, Okinawa, 903-01, Japan
SOURCE: Ryukyu Daigaku Nogakubu Gakujutsu Hokoku (1992), 39, 125-34
CODEN: RDNGBM; ISSN: 0370-4246
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB The properties of ***.alpha.-amylase*** and ***glucoamylase*** from a selected strain (Aspergillus awamori Nakazawa, IFO 4033) for awamori beverage production were investigated. ***.alpha.-Amylase*** had maximum activity at pH 4.5-5.5 and 65° and was quite stable at pH 3.0-6.0 and up to 60°. ***Glucoamylase*** had maximum activity at pH 4.3-5.5 and 60° and was stable at pH 3.5-6.0 and up to 60°. ***Glucoamylase*** was active on ***gelatinized*** starch prepared from glutinous rice, nonglutinous rice, broken rice imported from Thailand (raw material for awamori beverage, indica type), potato, sweet potato, wheat, corn and soluble starch. The hydrolysis degree of starch prepared from broken rice of Thailand was rapidly increased with time up to 2 h. The limit of hydrolysis of the starch by the enzyme was 82%. The enzyme could digest raw rice starch maximally at pH 3.2-3.5. The enzyme was very active on raw starch of glutinous, nonglutinous, and broken rices but was only slightly active on a raw potato starch.

L12 ANSWER 36 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1992:23280 HCAPLUS
DOCUMENT NUMBER: 116:23280
TITLE: Preparation of dextrose and nanofiltration membrane for its purification
INVENTOR(S): Hadden, Donald K.; Binder, Thomas P.; Sievers, Lowell J.
PATENT ASSIGNEE(S): Archer-Daniels-Midland Co., USA
SOURCE: Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 452238	A2	19911016	EP 1991-460016	19910321
EP 452238	A3	19921202		
R: DE, ES, FR, GB, IT				
CA 2038485	A1	19910924	CA 1991-2038485	19910318
JP 04218400	A	19920807	JP 1991-86026	19910325

PRIORITY APPLN. INFO.: US 1990-498344 A 19900323
AB Dextrose (I) is prepared from starch by a process comprising cooking a dextrose slurry in the presence of ***.alpha.-amylase***, hydrolyzing the ***gelatinized*** and dextrinized product with a ***glucoamylase***, and filtrating the sugar syrup with a monofiltration membrane (A) having pore size capable of passing the I while rejecting salts, di- and trisaccharides or higher mol. weight products. Examples of the A are com. available exp. MW. Series, Filtec NF-40, Filtration English UO, etc.

L12 ANSWER 37 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 14
ACCESSION NUMBER: 1992:47668 BIOSIS
DOCUMENT NUMBER: PREV199293027643; BA93:27643
TITLE: STUDIES ON THE PRODUCTION OF HYDROLYZABLE STARCHY MATERIAL IN HIGH CONCENTRATED SUBSTRATE BY TWO-STAGE EXTRUSION COOKING METHOD.
AUTHOR(S): HAYAKAWA I [Reprint author]; SAKAMOTO K; HAGITA H; FUJIO Y
CORPORATE SOURCE: LAB FOOD TECHNOL, DEP FOOD SCI TECHNOL, LFAC AGRIC, KYUSHU UNIV, 6-10-1 CHOME, HAKOZAKI, HIGASHI-KU, FUKUOKA 812
SOURCE: Journal of the Japanese Society for Food Science and Technology (Nippon Shokuhin Kogyo Gakkaishi), (1991) Vol. 38, No. 10, pp. 945-953.
CODEN: NSKGAX. ISSN: 0029-0394.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 13 Jan 1992
Last Updated on STN: 13 Jan 1992
AB One of the production methods of hydrolyzable starchy material under high concentration was developed by the addition of thermostable ***.alpha.-amylase*** using a twin-screw extruder, in order to get more useful application on white rice bran. Paddle screw elements were more effective than kneading screw elements during the first extrusion. On the seond extrusion with the addition of thermostable ***.alpha.-amylase***, screws assembled by only forward elements were the best one, because temperature increase of the extrudate was small during extrusion. The highly hydrolyzable starch material manufactured in this series of extrusions was completely ***gelatinized*** and over 90% of the ***.alpha.-amylase*** activity was maintained. The starchy material produced by two-stage extrusion process was hydrolyzable up to 50% based on substrate concentration. Moreover, hydrolyzation by the addition of 0.1% (v/w) ***glucoamylase*** could be brought to about 85% of the reducing sugar ratio based on total substrate as sugars after 48 hr. . .

L12 ANSWER 38 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 15
ACCESSION NUMBER: 1990:447765 BIOSIS
DOCUMENT NUMBER: PREV199090098405; BA90:98405
TITLE: ENZYMATIC PRODUCTION OF HIGH-PROTEIN AMARANTH FLOUR AND CARBOHYDRATE RICH FRACTION.
AUTHOR(S): PAREDES-LOPEZ O [Reprint author]; BARBA DE LA ROSA A P; CARABEZ-TREJO A
CORPORATE SOURCE: UNIDAD IRAPUATO, CIEA-INST POLITECNICO NATL, APDO POSTAL 629, 36500 IRAPUATO GTO, MEX
SOURCE: Journal of Food Science, (1990) Vol. 55, No. 4, pp. 1157-1161.
CODEN: JFDSAZ. ISSN: 0022-1147.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH

ENTRY DATE: Entered STN: 7 Oct 1990
Last Updated on STN: 7 Oct 1990

AB. . . process to produce high-protein amaranth flour (HPAF) and carbohydrate rich fraction (CRF) from raw flour were determined. Commercial preparations of ***.alpha.-amylase*** and ***glucoamylase*** were used. Conditions for both enzymes were: 20% (w/v) slurries of ***gelatinized*** whole flour and 0.10% (v/w) enzyme; for amylase, pH 6.5, 70° C and 30 min liquefaction time; for ***glucoamylase***, pH 4.5, 60° C and 60 min. The yield of HPAF was 38-39%. HPAF from both enzymes had 26-28% protein,. . .

L12 ANSWER 39 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 16

ACCESSION NUMBER: 1990:261086 BIOSIS
DOCUMENT NUMBER: PREV199090003172; BA90:3172
TITLE: STUDIES ON ISOLATION AND CHARACTERIZATION OF STARCH FROM PEARL MILLET PENNISETUM-AMERICANUM L. LEEKE GRAINS.
AUTHOR(S): WANKHEDE D B [Reprint author]; RATHI S S; GUNJAL B B; PATIL H B; WALDE S G; RODGE A B; SAWATE A R
CORPORATE SOURCE: DEP BIOCHEMISTRY APPLIED NUTRITION, CARBOHYDRATE RESEARCH LABORATORY, MARATHWADA AGRICULTURAL UNIV, PARBHANI 431 402, INDIA
SOURCE: Carbohydrate Polymers, (1990) Vol. 13, No. 1, pp. 17-28. CODEN: CAPOD8. ISSN: 0144-8617.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 5 Jun 1990
Last Updated on STN: 6 Jun 1990

AB. . . basis. The starch exhibited two-stage swelling and moderate solubility patterns in an aqueous medium. The starch contained 22.8% amylose. The ***gelatinization*** temperature range of the starch was 69.5-74.0-77.5°C. The viscoamylographic examination on starch paste (8%, w/v) showed a peak viscosity of. . . increased abruptly (885.0 BU) during cooling (50°C) probably due to retrogradation of amylose. The extent and modes of attack by ***glucoamylase*** and human salivary ***.alpha.-amylase*** on the native starch granules as viewed by scanning electron microscopy were investigated.

L12 ANSWER 40 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1989:613634 HCAPLUS
DOCUMENT NUMBER: 111:213634
TITLE: Cereal products sweetened by enzymic hydrolysis of starch to generate glucose and fructose in situ
INVENTOR(S): Maselli, John A.; Neidleman, Saul L.; Antrim, Richard L.; Johnson, Richard A.
PATENT ASSIGNEE(S): Nabisco/Cetus Food Biotechnology Research Partnership, USA; Nabisco Brands, Inc.
SOURCE: Eur. Pat. Appl., 28 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 312220	A1	19890419	EP 1988-308957	19880927
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
US 4857339	A	19890815	US 1987-101561	19870928
US 4859474	A	19890822	US 1987-101564	19870928
WO 8902705	A1	19890406	WO 1988-US3277	19880927
W: AU, JP, NO, SU, US, US				
AU 8927902	A	19890418	AU 1989-27902	19880927
CN 1034304	A	19890802	CN 1988-106895	19880927
CA 1332123	C	19940927	CA 1988-578550	19880927
CA 1337679	C	19951205	CA 1988-578546	19880927

PRIORITY APPLN. INFO.:

US 1987-101561	A	19870928
US 1987-101564	A	19870928
WO 1988-US3277	A	19880927

AB Cereal products, e.g. breakfast cereals, are sweetened by limited enzymic hydrolysis of partially ***gelatinized*** storage polysaccharides to release glucose which is converted to fructose with glucose isomerase if necessary. Treatments may be at any stage of the grain processing depending upon requirements and the stability of the enzymes involved. Unbumped whole wheat berries were used to prepare shredded cereal biscuits. The preparation of the grains involved heating the grains 100 g in H2O 700 mL at 100° for 30 min. and cooling to 85° before shredding and baking. Combinations of ***.alpha.-amylase*** and ***glucoamylase*** were added at the cooking stage, and glucose isomerase added after the cooking stage. Samples were processed after 2 h or tempered for 18 h before further processing. Tempered samples showed consistently higher reducing sugar content (40-80% higher, .apprx.3.5 g reducing sugar/100 g dried wheat) and were sweeter to taste. Samples treated with glucose isomerase had a sweeter taste than would be expected from reducing sugar content.

L12 ANSWER 41 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 17

ACCESSION NUMBER: 1989:308144 BIOSIS
DOCUMENT NUMBER: PREV198988021874; BA88:21874
TITLE: STUDIES ON ISOLATION AND CHARACTERIZATION OF STARCH FROM RAJGEERA GRAINS AMARANTHUS-PANICULATUS LIN.
AUTHOR(S): WANKHEDE D B [Reprint author]; GUNJAL B B; SAWATE R A; PATIL H B; BHOSALE M B; GAHILOD A T; WALDE S G
CORPORATE SOURCE: CARBOHYDRATE RES LAB, MARATHWADA AGRIC UNIV, PARBHANI-431 402 INDIA
SOURCE: Starch, (1989) Vol. 41, No. 5, pp. 167-171. CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 30 Jun 1989
Last Updated on STN: 30 Jun 1989

AB. . . The amylopectin content was 88.5% indicating the starch of rajgeera is probably waxy in nature. Amylolytic digestibility of native and ***gelatinized*** starch of rajgeera by human salivary ***.alpha.-amylase*** and ***glucoamylase*** was investigated.

L12 ANSWER 42 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 18

ACCESSION NUMBER: 1989:267500 BIOSIS
DOCUMENT NUMBER: PREV198988003582; BA88:3582
TITLE: STUDIES ON PHYSICOCHEMICAL PASTING CHARACTERISTICS AND AMYLOLYTIC SUSCEPTIBILITY OF STARCH FROM SORGHUM SORGHUM-BICOLOR L. MOENCH GRAINS.
AUTHOR(S): WANKHEDE D B [Reprint author]; DESHPANDE H W; GUNJAL B B; BHOSALE M B; PATIL H B; GAHILOD A T; SAWATE A R; WALDE S G
CORPORATE SOURCE: CARBOHYDRATE RES LAB, MARATHWADA AGRIC UNIV, PARBHANI 431 402, INDIA
SOURCE: Starch, (1989) Vol. 41, No. 4, pp. 123-127. CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 6 Jun 1989
Last Updated on STN: 6 Jun 1989

AB. . . considerably during cooking (viz. holding period of 30 min at 93%C).

The amylose content of the starch was 23.45%. The ***gelatinization*** temperature range was found to be 68.5-72.5-78.5°C. The results indicated that the native starch hydrolyzed to a limited extent by human salivary ***.alpha.-amylase*** and ***glucoamylase*** as compared to ***gelatinized*** starch. In addition, the mode of attack by amylolytic enzymes on the native starch granules viewed by SEM has been. . .

L12 ANSWER 43 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 19

ACCESSION NUMBER: 1989:135329 BIOSIS
DOCUMENT NUMBER: PREV198987069982; BA87:69982
TITLE: EFFECTS OF THERMAL PROCESSING OF WHEAT ON STARCH I. PHYSICO-CHEMICAL AND FUNCTIONAL PROPERTIES.
AUTHOR(S): HOLM J [Reprint author]; BJORCK I; ELIASSON A-C
CORPORATE SOURCE: UNIV LUND, CHEMICAL CENTRE, DEP FOOD CHEM, PO BOX 124, S-221 00 LUND, SWED
SOURCE: Journal of Cereal Science, (1988) Vol. 8, No. 3, pp. 249-260.
CODEN: JCSCDA. ISSN: 0733-5210.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 10 Mar 1989
Last Updated on STN: 10 Mar 1989

AB. . . lower limit (l) of what is normally used commercially. The starch of both steam-flaked and dry-autoclaved (l) wheat samples was ***gelatinized*** incompletely as measured by differential scanning calorimetry (DSC) or enzymically with ***glucoamylase***. DSC-measurements also indicated an increased resistance to further ***gelatinization*** of starch in dry-autoclaved (l) wheat, as shown by an increase of 9°C in the ***gelatinization*** temperature. Extrusion-cooking and popping led to macromolecular degradation of starch, as observed by gel permeation chromatography. Starch degradation was most. . . viscosities at low temperatures, which increased on heating, and low water solubilities of starch. The amylograms also indicated remaining intrinsic ***.alpha.-amylase*** activity in popped (l), dry-autoclaved and steam-flaked wheat.

L12 ANSWER 44 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1989:56090 HCAPLUS
DOCUMENT NUMBER: 110:56090
TITLE: Enzymic method for the determination of starch in wheat flour preparations
AUTHOR(S): Sasatani, Takasi; Yamazaki, Mitsuhiro; Sasakawa, Kunio; Miyazaki, Hiroshi
CORPORATE SOURCE: Tokyo Customs Lab., Tokyo, 108, Japan
SOURCE: Kanzei Chuo Bunsekishoho (1988), 28, 17-21
CODEN: KCBSDI; ISSN: 0286-1933
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB An enzymic method for determination of starch in wheat flour prepns. using ***glucoamylase*** and ***.alpha.-amylase*** was examined Starch was adequately ***gelatinized*** by 2 N NaOH solution in a water bath at 45° for 15 min. The enzymic method making use of ***glucoamylase*** from Rhizopus niveus in combination with . ***alpha.-amylase*** from Bacillus subtilis was the best method for saccharification of starch in a wheat flour preparation Glucose produced by saccharification was determined by the Hanes method. Little influence of various additives such as sucrose, skim milk, salt, soybean oil and NaHCO3 was observed

L12 ANSWER 45 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 20

ACCESSION NUMBER: 1986:204634 BIOSIS
DOCUMENT NUMBER: PREV198681095934; BA81:95934
TITLE: DUAL ENZYME METHOD FOR DETERMINATION OF TOTAL NONSTRUCTURAL CARBOHYDRATES.
AUTHOR(S): KHALEELUDDIN K [Reprint author]; BRADFORD L
CORPORATE SOURCE: US DEP AGRIC, AGRIC RES SERVICE, SOUTHERN PLAINS RANGE RES STN, WOODWARD, OKLA 73801, USA
SOURCE: Journal of the Association of Official Analytical Chemists, (1986) Vol. 69, No. 1, pp. 162-166.
CODEN: JANCA2. ISSN: 0004-5756.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ENTRY DATE: Entered STN: 28 May 1986
Last Updated on STN: 28 May 1986

AB Total nonstructural carbohydrates (TNC) in plant tissue are underestimated by single enzyme (***.alpha.-amylase*** or ***glucoamylase***) extraction and overestimated by mild acid hydrolysis. A combination of ***glucoamylase*** and mycolase degraded starch completely to glucose at 60° C and pH 4.9. This dual enzyme extraction procedure was effective. . . for maximum TNC values. Lead acetate precipitation of the protein in the dual enzyme extracts interfered with the copper-iodometric titration. ***Gelatinization*** of starch in plant tissue by autoclaving gave higher TNC values than heating on a hot plate for 5 min.. . .

L12 ANSWER 46 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1986:459540 HCAPLUS
DOCUMENT NUMBER: 105:59540
TITLE: Effect of microwave irradiation on potato starch granules
AUTHOR(S): Hagiwara, Shigeko; Esaki, Kimiko; Nishiyama, Koji; Kitamura, Shinichi; Kuge, Takashi
CORPORATE SOURCE: Dep. Food Sci., Kyoto Prefect. Univ., Kyoto, 606, Japan
SOURCE: Denpun Kagaku (1986), 33(1), 1-9
CODEN: DPNKAV; ISSN: 0021-5406
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB Effects of microwave irradiation at 2450 MHz on the properties of potato starch (I) [9005-25-8] granules in a closed test tube were studied at 85-150° and at various moisture levels (moisture content of I, 5-25%). Microwave heating did not alter the x-ray diffraction pattern, but weakened the sharpness of the pattern with an increase in the amorphous region. The sharpness of B-crystalline peaks of microwave-treated I was partially recovered by steeping in H2O. The ***gelatinization*** properties of microwave-treated I were similar to those of heat-moisture-treated I. The susceptibility of I to ***.alpha.-amylase*** (EC 3.2.1.1) [9000-90-2] and ***glucoamylase*** (EC 3.2.1.3) [9032-08-0] was increased greatly by irradiation in parallel with an increase in the capacity to adsorb amylases.

L12 ANSWER 47 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1986:3194 HCAPLUS
DOCUMENT NUMBER: 104:3194
TITLE: Raw-starch digesting enzymes of Aspergillus sp. K-27
AUTHOR(S): Abe, Junichi; Bergmann, Frederico W.; Obata, Kazuaki; Hizukuri, Susumu
CORPORATE SOURCE: Fac. Agric., Kagoshima Univ., Kagoshima, 566, Japan
SOURCE: Denpun Kagaku (1985), 32(2), 128-35
CODEN: DPNKAV; ISSN: 0021-5406
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB The thermophilic fungus, Aspergillus K-27, produced extracellular

amylolytic enzymes in a submerged culture at 45° with wheat starch as a C source. By adding α-methyl-D-glucoside to the medium, the enzyme production doubled at 5 days incubation. The enzymes strongly digested not only cereal but also tuber and root starches without ***gelatinization***. The crude enzyme fraction exhibited ≥2 different activities, ***glucoamylase*** and ***.alpha.-amylase***; the former was the major activity. The ***glucoamylase*** of K-27 showed higher ability to digest raw starch than did the enzymes of A. niger and R. delemer. ***.alpha.-Amylase*** did not digest raw starch effectively, but it greatly stimulated the activity of the ***glucoamylase***.

L12 ANSWER 48 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:190339 HCAPLUS
DOCUMENT NUMBER: 100:190339
TITLE: Fructose production
INVENTOR(S): Bolgar, Pal; Juhasz, Tibor; Toth, Janos; Koncsiki, Ferenc; Szatmari, Edi; Bende, Pal; Hollo, Janos; Laszlo, Elemer; Hoschke, Agoston; et al.
PATENT ASSIGNEE(S): Naarden International N. V., Neth.
SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1984, (5), 235.
CODEN: URXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 1072817	A3	19840207	SU 1978-2575800	19780203
NL 7400363	A	19740801	NL 1974-363	19740110
BE 809785	A1	19740715	BE 1974-139846	19740115
ZA 7400357	A	19741127	ZA 1974-357	19740117
AU 7464646	A	19750724	AU 1974-64646	19740118
CS 174229	B2	19770331	CS 1974-549	19740128
FR 2215467	A1	19740823	FR 1974-2912	19740129
GB 1456262	A	19761124	GB 1974-4060	19740129
AT 7400702	A	19761215	AT 1974-702	19740129
AT 338714	B	19770912		

PRIORITY APPLN. INFO.: HU 1973-GO1229 A 19730130
AB Fructose [57-48-7] is produced from ***gelatinized*** starch [9005-25-8] by the combined action of ***.alpha.-amylase*** [9000-90-2], ***glucoamylase*** [9032-08-0], and glucose isomerase [9055-00-9].

L12 ANSWER 49 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:549968 HCAPLUS
DOCUMENT NUMBER: 101:149968
TITLE: Digestibility of amylose-lipid complexes in vitro and in vivo
AUTHOR(S): Holm, J.; Bjoerck, I.; Ostrowska, S.; Eliasson, A. C.; Asp, N. G.; Larsson, K.; Lundquist, I.
CORPORATE SOURCE: Dep. Food Chem., Univ. Lund, Lund, S-220 07, Swed.
SOURCE: Fats (Lipids) Baking Extrusion, Contrib. LIPIDFORUM Symp. (1984), Meeting Date 1983, 52-9. Editor(s): Marcuse, Reinhard. LIPIDFORUM: Goeteborg, Swed.
CODEN: 51SHAD
DOCUMENT TYPE: Conference
LANGUAGE: English
AB Amylose from potato was complexed with lysolecithin and oleic acid. The complexes displayed substantially reduced susceptibility to hog pancreatic ***.alpha.-amylase*** in vitro, when compared to free amylose in solution Amylose-lysolecithin complexes disappeared completely from the rat gastrointestinal tract within 120 min, indicating that the complexes amylose was hydrolyzed and absorbed to the same extent as free amylose in vivo. However, the plasma glucose and the plasma insulin responses indicated a somewhat slower degradation and absorption of complexed amylose compared to free amylose that is consistent with the slower degradation of amylose-lipid complexes in vitro. The presence of the bacterial thermostable ***.alpha.-amylase***, Termanyl, in the ***gelatinization*** step eliminated the contribution of the complex in an enzymic dietary fiber anal., and increased the result of a starch [9005-25-8] anal. using ***glucoamylase*** at 60°.

L12 ANSWER 50 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN
ACCESSION NUMBER: 1984:177791 BIOSIS
DOCUMENT NUMBER: PREV198477010775; BA77:10775
TITLE: CONTINUOUS PRODUCTION OF HIGH GLUCOSE SYRUP BY CHITIN IMMOBILIZED AMYLASE.
AUTHOR(S): FLOR P Q [Reprint author]; HAYASHIDA S
CORPORATE SOURCE: LAB APPL MICROBIOL, DEP AGRIC CHEM, KYUSHU UNIV, 46 FUKUOKA 812, JPN
SOURCE: Biotechnology and Bioengineering, (1983) Vol. 25, No. 8, pp. 1973-1980.
CODEN: BIBIAU. ISSN: 0006-3592.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB A simple method of preparing a chitin-immoblized ***.alpha.-amylase*** and ***glucoamylase*** from the protease- and glycosidase-less mutant HF-15 of Aspergillus awamori var. kawachi was developed and used for the production of high-glucose syrup. The ***glucoamylase*** was tightly bound to chitin without the aid of a crosslinking agent because the enzyme contained a specific binding site for chitin. Continuous production of high glucose concentrate from a highly concentrated ***.alpha.-amylase***-treated ***gelatinized*** starch substrate (.apprx. 45% total solids) was undertaken successfully with the use of a column-packed chitin-immobilized amylase. The activity of. . . contamination, indicating that the immobilized amylase had no transglucosidation activity. The immobilized amylase was most active in the conversion of ***gelatinized*** starch to glucose at 55° C and pH 2.5-5.0. Drying the chitin-immobilized amylase decreased the activity and shortened storage life;. . .

L12 ANSWER 51 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 21
ACCESSION NUMBER: 1984:266264 BIOSIS
DOCUMENT NUMBER: PREV198478002744; BA78:2744
TITLE: ENZYMATIC CONVERSION OF STARCH IN TWIN SCREW HTST EXTRUDER.
AUTHOR(S): HAKULIN S [Reprint author]; LINKO Y-Y; LINKO P; SEILER K; SEIBEL W
CORPORATE SOURCE: FEDERAL RESEARCH CENTRE GRAIN AND POTATO PROCESSING, INST BAKING TECH, D-4930 DETMOLD
SOURCE: Starch, (1983) Vol. 35, No. 12, pp. 411-414.
CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB Wheat starch was liquefied to DE [dextrose equivalent] 25-30 employing heat stable ***.alpha.-amylase*** and twin-screw Werner and Pfleiderer Continua 58 HTST-extruder. Most significant reduction in batch saccharification time was obtained when starch was. . . at 120° C mass temperature, feed rate 1500 g min-1 and screw rotation rate 250 min-1; 0.9% Novo Termamyl 120L ***.alpha.-amylase*** was added immediately after initiation of ***gelatinization*** in the extruder. Saccharification was carried out at 60° C, employing

0.36% Novo ***glucoamylase*** 150L to reach a DE96 in 22 h. Best total conversion was obtained when also saccharification was initiated in extruder by adding ***glucoamylase*** just before the die element, after lowering mass temperature to 60° C and by allowing the saccharification to continue atomic . .

L12 ANSWER 52 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 22
ACCESSION NUMBER: 1984:258149 BIOSIS
DOCUMENT NUMBER: PREV198477091133; BA77:91133
TITLE: ENZYMATIC HYDROLYSIS OF STARCH AND CEREAL FLOURS AT INTERMEDIATE MOISTURE CONTENTS IN A CONTINUOUS EXTRUSION REACTOR.
AUTHOR(S): CHOUVEL H [Reprint author]; CHAY P B; CHEFTEL J C
CORPORATE SOURCE: LAB BIOCHIM TECHNOL ALIMENTAIRES, UNIV SCI TECH, PLACE E BATAILLON 34060 MONTPELLIER
SOURCE: Lebensmittel-Wissenschaft and Technologie, (1983) Vol. 16, No. 6, pp. 346-353.
CODEN: LBWTAP. ISSN: 0023-6438.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB Continuous liquefaction of pregelatinized corn starch with a thermostable ***.alpha.-amylase*** was carried out in a twin screw extruder. The influence of pH, temperature, water content, enzyme/substrate ratio and addition of. . . of 2-8 min, gave syrups of low viscosity and high solubility with DE [dextrose equivalents] close to 20%. The combined ***gelatinization*** and liquefaction of raw corn starch were also carried out continuously by single passage in a long barrel extruder, with ***.alpha.-amylase*** injection at mid-barrel. ***Gelatinization*** at 130°-140° C and 65% dry solids in the first 600 mm of screw length, followed by enzymatic liquefaction atomic . . flour or whole corn flour were further incubated in a stirred tank at 60°-70° C, with or without addition of ***glucoamylase***. Without ***glucoamylase***, maximum DE of 20-50% and glucose contents of 5-9% were reached 3 h after extrusion, due to residual ***.alpha.-amylase*** activity. With ***glucoamylase***, DE of 33-88% and glucose contents of 28-72% were reached 1 h after extrusion and increased upon storage at room temperature. The syrups obtained with ***glucoamylase*** contained 55% dry solids, had water activities of .apprx. 0.93, pH of 4.5 and low microbial loads. Their shelf life. . .

L12 ANSWER 53 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 23
ACCESSION NUMBER: 1984:313443 BIOSIS
DOCUMENT NUMBER: PREV198478049923; BA78:49923
TITLE: DIGESTIBILITY OF AMYLOSE LIPID COMPLEXES IN-VITRO AND IN-VIVO.
AUTHOR(S): HOLM J [Reprint author]; BJORCK I; OSTROWSKA S; ELIASSON A-C; ASP N-G; LARSSON K; LUNDQUIST I
CORPORATE SOURCE: DEP FOOD CHEMISTRY, UNIV LUND, PO BOX 740, S-220 07 LUND, SWED
SOURCE: Starch, (1983) Vol. 35, No. 9, pp. 294-297.
CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB Amylose from potatoes was complexed with lysolecithin and oleic acid. The degradation of complexed amylose by hog pancreatic ***.alpha.-amylase*** in-vitro was studied, as well as the in-vivo absorption in the rat. The presence of a bacterial thermostable ***.alpha.-amylase*** in the ***gelatinization*** step increased the result of a starch analysis using ***glucoamylase***. Complexed amylose displayed a substantially reduced susceptibility to ***.alpha.-amylase*** in-vitro. However, when adding a large excess of enzyme, the complex was completely hydrolyzed after 3 h. Amylose-lysolecithin complex disappeared. . .

L12 ANSWER 54 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 24
ACCESSION NUMBER: 1983:194651 BIOSIS
DOCUMENT NUMBER: PREV198375044651; BA75:44651
TITLE: RAW STARCH DIGESTIVE CHITIN IMMOBILIZED AMYLASE FROM A PROTEASE GLYCOSIDASE LESS MUTANT OF ASPERGILLUS-AWAMORI-VAR-KAWACHI.
AUTHOR(S): HAYSHIDA S [Reprint author]; FLOR P Q
CORPORATE SOURCE: DEPARTMENT OF AGRICULTURAL CHEMISTRY, KYUSHU UNIVERSITY, FUKUOKA 812, JAPAN
SOURCE: Agricultural and Biological Chemistry, (1982) Vol. 46, No. 6, pp. 1639-1646.
CODEN: ABCHA6. ISSN: 0002-1369.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB The ***.alpha.-amylase*** and ***glucoamylase*** produced by a protease-, glycosidase-less mutant HF-15 of A. awamori var. kawachi were adsorbable onto chitin. This adsorption was pH-independent,. . . a cross-linking agent, glutaraldehyde; it retained > 90% of the original activity of the free enzyme. The immobilized amylase digested ***gelatinized*** potato starch, glycogen and even raw corn starch to the same high extent as glucose similar to the free enzyme,. . .

L12 ANSWER 55 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1983:30579 HCAPLUS
DOCUMENT NUMBER: 98:30579
TITLE: Preparation and properties of the raw starch-digestive chitin-immobilized amylase
AUTHOR(S): Flor, Perfecto Q.; Hayashida, Shinsaku
CORPORATE SOURCE: Dep. Agric. Chem., Kyushu Univ., Fukuoka, 812, Japan
SOURCE: Chitin Chitosan, Proceeding Int. Conf., 2nd (1982), 153-8. Editor(s): Hirano, Shigehiro; Tokura, Seiichi. Jpn. Soc. Chitin Chitosan: Tottori, Japan.
CODEN: 48XAAL
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The raw starch-digestive ***glucoamylase*** I (I) of Aspergillus awamori kawachii was adsorbed onto chitin, whereas the other 2 types of raw starch-indigestive ***glucoamylases*** I' and II were not adsorbed onto chitin. This chitin-immobilized I hydrolyzed ***gelatinized*** starch and glycogen to high extents as glucose similar to the free enzyme, but failed to digest raw starches, because ***glucoamylase*** I was adsorbed at the raw starch-affinity site. I and raw starch-adsorbable ***.alpha.-amylase*** produced by a protease- glycosidase-less mutant HF-15 of the same mold strain under cultural conditions were adsorbable onto chitin independent of pH. These amylases were tightly bound onto chitin without the aid of a crosslinking agent, glutaraldehyde. The chitin-immobilized mutant amylase retained >90% of the original activity of the free enzyme and hydrolyzed ***gelatinized*** starch, glycogen, and even raw starch to the high extents as glucose, similar to the free enzyme, but different from the unbound crude enzyme in having no transglucosidase activity and slightly different in pH and thermo-stabilities. The experiment with the immobilized mutant amylase for alc. fermentation demonstrated the possibility of recycling the enzyme for raw starch saccharification. The purified mutant ***glucoamylase*** mol. which has a mol. weight of 250,000 had a specific chitin-binding site which was different from the active and raw starch-affinity sites.

L12 ANSWER 56 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 25

ACCESSION NUMBER: 1981:266820 BIOSIS
DOCUMENT NUMBER: PREV198172051804; BA72:51804
TITLE: ISOLATION AND PHYSICOCHEMICAL PROPERTIES OF STARCH EXTRACTED FROM ELEPHANT YAM AMORPHOPHALLUS-CAMPANULATUS.
AUTHOR(S): WANKHEDE D B [Reprint author]; SAJJAN S U
CORPORATE SOURCE: DISCIPLINE OF BIOCHEM AND APPLIED NUTRITION, CENT FOOD TECHNOL RES INST, MYSORE 570013, INDIA
SOURCE: Starch, (1981) Vol. 33, No. 5, pp. 153-157.
CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB. . . the starch was 24.5%. The viscosity decreased considerably during cooking at 90° C. The amylolytic susceptibility of the native and ***gelatinized*** starch with human salivary ***.alpha.-amylase*** and ***glucoamylase*** were also investigated.

L12 ANSWER 57 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 26

ACCESSION NUMBER: 1981:196251 BIOSIS
DOCUMENT NUMBER: PREV198171066243; BA71:66243
TITLE: ISOLATION AND PHYSICOCHEMICAL PROPERTIES OF STARCH FROM WINGED BEAN PSOPHOCARPUS-TETRAGONOLOBUS.
AUTHOR(S): UMADEVI S [Reprint author]; WANKHEDE D B
CORPORATE SOURCE: DISCIPLINE BIOCHEM APPL NUTR, CENT FOOD TECHNOL RES INST, MYSORE 570013 INDIA
SOURCE: Starch, (1981) Vol. 33, No. 1, pp. 23-26.
CODEN: STARDD. ISSN: 0038-9056.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB Preparation and physicochemical properties of winged bean stach were studied. ***Gelatinization*** temperature range was 60-70° C and it exhibited single stage swelling and low solubility. The extensive solubility in dimethylsulfoxide may be due to heterogeneous bonding forces within the granule. The amylolytic susceptibility of native and ***gelatinized*** starch with human salivary ***.alpha.-amylase*** and ***glucoamylase*** was studied. The starch was non-ionic. The amylose content was 38.5%.

L12 ANSWER 58 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN

ACCESSION NUMBER: 1981:146564 BIOSIS
DOCUMENT NUMBER: PREV198171016556; BA71:16556
TITLE: STUDIES ON DETERMINATION OF STARCH IN AGRICULTURAL PRODUCTS 1. EXAMINATION OF THE ENZYMATIC METHOD USING GLUCO AMYLASE.
AUTHOR(S): HASE S [Reprint author]; YASUI T
CORPORATE SOURCE: NATL FOOD RES INST, MINIST AGRIC FOR FISH, YATABE, IBARAKI, JPN
SOURCE: Report of National Food Research Institute, (1980) No. 36, pp. 98-103.
CODEN: SSKKCY. ISSN: 0301-9780.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: JAPANESE
AB. . . starch as test samples, the enzymatic method of starch determination with glucomylase was examined. Starch in these samples was well ***gelatinized*** by pretreatment in a boiling water bath followed by autoclaving at 130° C for 30 min. A crude preparations of ***glucoamylase*** from Rhizopus niveus showed stronger saccharifying power than a highly purified enzyme preparation, which showed only incomplete saccharification. When ***.alpha.-amylase*** was used together with ***glucoamylase***, the degree of saccharification was significantly improved. A crude preparation of maltase from Aspergillus niger and R. delemar used in combination with ***glucoamylase*** showed the greatest enhancement of saccarfication. It is inferred that the enhancing factor is not maltase but ***.alpha.-amylase*** and some other factor(s) in the crude enzyme preparation. In determination of glucose after saccharification, the method using glucose oxidase-peroxidase. . .

L12 ANSWER 59 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 27

ACCESSION NUMBER: 1980:141085 BIOSIS
DOCUMENT NUMBER: PREV198069016081; BA69:16081
TITLE: ENZYMATIC PROCEDURE FOR DETERMINATION OF STARCH IN CEREAL PRODUCTS.
AUTHOR(S): BAUR M C [Reprint author]; ALEXANDER R J
CORPORATE SOURCE: KRAUSE MILLING CO, MILWAUKEE, WIS 53201, USA
SOURCE: Cereal Chemistry, (1979) Vol. 56, No. 4, pp. 364-366.
CODEN: CECHAF. ISSN: 0009-0352.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
AB. . . of cereal products. The procedure requires about 4 h to perform and employs standard laboratory equipment. It incorporates a short ***gelatinization*** step at 100° C, high temperature (85° C) ***.alpha.-amylase*** hydrolysis, and conversion of starch to glucose at 60° C with ***glucoamylase***. Readily available commercial enzymes were employed. The new procedure provides accurate starch values as shown by comparison with standard procedures.. . .

L12 ANSWER 60 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1979:606421 HCAPLUS
DOCUMENT NUMBER: 91:206421
TITLE: Pilot plant production of glucose with glucoamylase immobilized to porous silica
AUTHOR(S): Lee, Douglas Dean
CORPORATE SOURCE: Dep. Chem. Eng., Iowa State Univ., Ames, IA, USA
SOURCE: Report (1978), NSF/RA-780474; Order No. PB-295507, 260 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1979, 79(18), 94
DOCUMENT TYPE: Report
LANGUAGE: English
AB ***Glucoamylase*** was immobilized to porous silica and its kinetics and temperature stability determined in laboratory and pilot scale reactors. Reaction rates and stability were measured with acid, ***.alpha.-amylase***, and acid-***.alpha.-amylase*** thinned corn starches. The immobilized ***glucoamylase*** was very stable in both laboratory and pilot plant packed column reactors, with a half-life at 55° under production conditions of 581 h. The enzyme in the pilot plant reactor lost .apprx.25% of its initial activity after 90+ days of operation at 38-40° and over one year of storage at 4°, mostly due to pore blockage by ***gelatinized*** starch due to incomplete starch thinning. The method of corn starch thinning to produce dextrin has a marked effect on final product distribution, glucose concentration, and dextrose equivalent

L12 ANSWER 61 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1979:489886 HCAPLUS
DOCUMENT NUMBER: 91:89886
TITLE: Glucoamylase immobilized on cationic colloidal silica

INVENTOR(S): Holik, Dennis J.; Mueller, Nancy J.
PATENT ASSIGNEE(S): CPC International Inc., USA
SOURCE: Belg., 19 pp.
CODEN: BEXXAL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
BE 870096	A1	19781218	BE 1978-57241	19780831
US 4202939	A	19800513	US 1977-829690	19770901
CA 1105858	A1	19810728	CA 1978-310098	19780825
JP 54049392	A	19790418	JP 1978-105676	19780831
JP 63002595	B	19880119		
AU 7839484	A	19800306	AU 1978-39484	19780901
AU 520531	B2	19820204		

PRIORITY APPLN. INFO.: US 1977-829690 A 19770901

AB Active insol. ***glucoamylase*** (I) [9032-08-0] was prepared by ***gelatinizing*** a mixture of I with cationic colloidal silica at pH .apprx.6.5, freezing the gel at <.apprx.15° for .apprx.24 h, thawing the solid phase at .apprx.20°, and separating the solid particles containing I; the immobilized I was used to obtain glucose [50-99-7] or syrups containing glucose from a starch [9005-25-8] hydrolyzate. Thus, 180 mL of a solution of 30% cationic colloidal silica and 120 mL water was stirred with 60 mL of a solution containing 3990 units I. The mixture was agitated for 15 min, and 140 mL 1% Na2CO3 was added dropwise, with agitation over 2 h. The gel obtained was frozen at -20° for 24 h, and thawed at room temperature for 5 h. The solid phase was collected and washed, and had an activity of 16 units I/g dry support. An aqueous 25% starch hydrolyzate (dextrose equivalent 29) diluted by ***.alpha.-amylase*** was passed through a column containing immobilized I. The pH of the hydrolyzate was maintained at 4.3 and the temperature at 45°. The composition of the carbohydrates in the syrup leaving the column, determined by high-pressure liquid chromatog., was dextrose 90.9, disaccharides 2.2, trisaccharides 0.6, and oligosaccharides with ≥4 units 6.3%. No I activity was detected in the syrup, and the sugar composition of the effluent was almost constant during 8 days of operation.

L12 ANSWER 62 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 28
ACCESSION NUMBER: 1979:124378 BIOSIS
DOCUMENT NUMBER: PREV197967004378; BA67:4378
TITLE: PREPARATION AND PROPERTIES OF DE STARCHED MILLED RICE.
AUTHOR(S): RESURRECCION A P [Reprint author]; JULIANO B O; EGGUM B O
CORPORATE SOURCE: DEP CHEM, INT RICE RES INST, LOS BANOS, LAGUNA, PHILIPP
SOURCE: Nutrition Reports International, (1978) Vol. 18, No. 1, pp. 17-26.
CODEN: NURIBL. ISSN: 0029-6635.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH

AB. Laboratory-scale preparation of destarched milled rice for N balance experiments was studied using commercial Rhizopus sp. ***glucoamylase*** and Aspergillus oryzae ***.alpha.-amylase*** on 11.1% protein IR480-5-9 rice and 7.1% protein IR32 rice. Contaminant acid protease in the ***glucoamylase*** reduced the recovery of, and lysine content in, residual protein from raw and cooked rice. ***Gelatinization*** of starch improved the efficiency of destarching with fungal ***.alpha.-amylase*** without change in amino acid pattern of residual protein, destarched rice with 75-80% protein content were obrained in 84-100% recovery. . . . of heat treatment of the rices. The higher susceptibility of raw IR480-5-9 rice to α-amylolysis was due to the lower ***gelatinization*** temperature and amylose content of starch as compared to IR32 rice.

L12 ANSWER 63 OF 69 BIOSIS COPYRIGHT (c) 2007 The Thomson Corporation on STN DUPLICATE 29
ACCESSION NUMBER: 1977:173671 BIOSIS
DOCUMENT NUMBER: PREV197763068535; BA63:68535
TITLE: COMPARATIVE SUSCEPTIBILITY TO AMYLASES OF STARCHES FROM DIFFERENT PLANT SPECIES AND SEVERAL SINGLE ENDOSPERM MUTANTS AND THEIR DOUBLE MUTANT COMBINATIONS WITH OPAQUE-2 INBRED OH-43 MAIZE.
AUTHOR(S): FUWA H; NAKAJIMA M; HAMADA A; GLOVER D V
SOURCE: Cereal Chemistry, (1977) Vol. 54, No. 2, pp. 230-237.
CODEN: CECHAF. ISSN: 0009-0352.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: Unavailable

AB. . . (tubers of Dioscorea batatas DECNE), and sweet potato were respectively in decreasing order more resistant to the attack of Rhizopus ***glucoamylase***, pancreatin and crystalline ***.alpha.-amylase*** of Bacillus subtilis than were those of maize and rice. Several endosperm mutants, each nearly isogenic in the maize inbred. . . L.), their double-mutant combinations with opaque-2, and the normal counterpart, were studied for the relative susceptibility of their granular and ***gelatinized*** starches to amylases. When opaque-2 was combined with each of the 10 endosperm mutants, i.e., amylose-extender, brittle-1, brittle-2, dull, soft-starch,. . . shrunken-2, sugary-1, sugary-2 and waxy, it was observed that the starch granules of these double mutants were digested by Rhizopus ***glucoamylase***, pancreatin and B. subtilis ***.alpha.-amylase*** to an extent very comparable to their respective nonopaque single-mutant counterpart. Starch granules of the amylose-extender mutant and its double. . . among the endosperm mutants and their double-mutant combinations is susceptibility of starch granules to the action of amylases disappeared following ***gelatinization*** of starches with alkali.

L12 ANSWER 64 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1976:588440 HCAPLUS
DOCUMENT NUMBER: 85:188440
TITLE: Immobilization of enzymes with a starch-graft copolymer
INVENTOR(S): Weaver, Mary O.; Bagley, Edward B.; Fanta, George F.; Doane, William M.
PATENT ASSIGNEE(S): United States Dept. of Agriculture, USA
SOURCE: U.S., 12 pp. Division of U.S. 3,935,099.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3985616	A	19761012	US 1975-611459	19750908
US 3935099	A	19760127	US 1974-456911	19740403

PRIORITY APPLN. INFO.: US 1974-456911 A3 19740403

AB An aqueous fluid-absorbing polymer suitable for immobilization of enzymes was prepared as a graft polymer (I) from ***gelatinized*** starch and saponified polyacrylonitrile in ratios of from 1:1.5 to 1:1.9, resp. I was capable of absorbing >300 parts of water by weight per part of the water-insol. solids. ***Glucoamylase*** and ***.alpha.-amylase*** were immobilized by mixing the enzyme solution with I, where the polymer absorbs the enzymes and swells, followed by addition of

sufficient water-soluble mineral salts to shrink the polymer and entrap the enzyme within its matrixes.

L12 ANSWER 65 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1976:87947 HCAPLUS
DOCUMENT NUMBER: 84:87947
TITLE: Enzymic hydrolysis of granular starch
INVENTOR(S): Leach, Harry W.; Hebeda, Ronald E.; Holik, Dennis J.
PATENT ASSIGNEE(S): CPC International Inc., USA
SOURCE: U.S., 14 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3922196	A	19751125	US 1974-513198	19741008
US 3865231	A	19750211	US 1974-437457	19740128
ZA 7402102	A	19750430	ZA 1974-2102	19740402
BE 813518	A1	19741010	BE 1974-2053546	19740410
SE 7511221	A	19760409	SE 1975-11221	19751007
FR 2287509	A2	19760507	FR 1975-30725	19751007
CA 1058106	A1	19790710	CA 1975-237176	19751007
BE 834292	A4	19760408	BE 1975-2054605	19751008
NL 7511796	A	19760412	NL 1975-11796	19751008
DE 2545172	A1	19760422	DE 1975-2545172	19751008
JP 51063952	A	19760602	JP 1975-121752	19751008
US 4113509	A	19780912	US 1976-721926	19760909
ES 457903	A2	19781001	ES 1977-457903	19770416

PRIORITY APPLN. INFO.:

US 1973-349899	A2	19730410
US 1974-437457	A2	19740128
US 1974-437452	A2	19740128
US 1974-513198	A	19741008
US 1975-577523	A	19750514

AB Granular starch [9005-25-8] was solubilized with ***.alpha.-amylase*** [9000-90-2] and 1 or more saccharification enzymes at temps. above the initial but below the final ***gelatinization*** temperature and then was submitted to a saccharification step at a further reduced temperature in order to avoid the reversion product and starch-fat complex formation which normally occurs in standard, higher-temperature acid-enzyme or enzyme-enzyme processes. Thus, a 25% starch solution at pH 5.5 and 75° was reacted with 2 Th units bacterial ***.alpha.-amylase*** (thermamyl) and 0.14 units ***glucoamylase*** [9032-08-0] for 26 hr to yield a 97.6% solubilized starch solution After adjusting the pH to 4.3 and temperature to 60°, 0.14 addnl. units ***glucoamylase*** was added and the slurry saccharified for 120 hr yielding 95.3% dextrose [50-99-7].

L12 ANSWER 66 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1975:96628 HCAPLUS
DOCUMENT NUMBER: 82:96628
TITLE: Microphotographic and chromatographic studies of wheat starch grains during enzymic hydrolysis
AUTHOR(S): Popadich, J. A.; Lysyuk, F. A.; Traubenberg, S. E.; Shub, I. S.
CORPORATE SOURCE: Mosk. Tekhnol. Inst. Pishchevoi Prom., Moscow, USSR
SOURCE: Sakharnaya Promyshlennost (1946-1987) (1975), (1), 60-6
CODEN: SAPRAK; ISSN: 0036-3340
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB During hydrolysis of wheat starch granules in vitro by purified fungal amylases (Aspergillus awamori ***glucoamylase***, Endomycopsis ***glucoamylase***, A. oryzae ***.alpha.-amylase***, or amylase F) the outer part of the granules was gradually stripped off while the center part remained intact. Bacillus subtilis ***.alpha.-amylase***, however, broke the granules into pieces. In contrast to the bacterial enzyme, the fungal enzymes produced glucose and maltose from the native starch, and formed very little dextrin. However, with ***gelatinized*** starch, greater quantities of dextrin were formed, especially in the beginning of the reaction.

L12 ANSWER 67 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1973:402775 HCAPLUS
DOCUMENT NUMBER: 79:2775
TITLE: Hydrolysis of intact leaf starch grains by glucamylase and α-amylase
AUTHOR(S): Bailey, R. W.; Macrae, J. C.
CORPORATE SOURCE: Appl. Biochem. Div., Dep. Sci. Ind. Res., Palmerston North, N. Z.
SOURCE: FEBS Letters (1973), 31(2), 203-4
CODEN: FEBLAL; ISSN: 0014-5793
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Storage starch grains were prepared from potato, maize, and Amaranthus lividus seed. Leaf starch grains were isolated from white clover (Trifolium repens) and tobacco (Nicotiana tabacum) leaves. There was no hydrolysis of the clover leaf and potato starches, intact or ***gelatinized***, when they were incubated in buffer in the absence of ***glucoamylase***. Tobacco leaf starch and maize starch grains gave similar results. The isolated leaf starch grains, however, were completely hydrolyzed by fungal glycoamylase and by human salivary ***.alpha.-amylase*** without any prior ***gelatinization*** treatment, indicating differences in the structure of these grains as compared to plant storage organ grains.

L12 ANSWER 68 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1971:4885 HCAPLUS
DOCUMENT NUMBER: 74:4885
TITLE: Starch syrup of low viscosity
INVENTOR(S): Sugimoto, Kaname; Hirao, Mamoru; Mitsuhashi, Masakazu; Ogasawara, Junsuke
PATENT ASSIGNEE(S): Hayashibara Co., Ltd.
SOURCE: Ger. Offen., 13 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1916726	A	19701105	DE 1969-1916726	19690401

PRIORITY APPLN. INFO.:

DE 1969-1916726	19690401

AB Starch sirups with mainly linear oligo- or polysaccharides were prepared by saccharification of high mol. amylostarch or low mol. amylose prepared by amylopectin decomposition by α-1,6-glucosidase with amylases. Thus, 35% sweet potato starch suspension was ***gelatinized*** in 10 min at 160°, dispersed, cooled in vacuo to 50°, and degraded for 30 min at 45° and pH 6 with 20 units pullulanase/g starch. ***ALPHA.-Amylase*** (15 units/g) was added. At 60° and pH 6, reaction for 5 or 20 hr yielding 20 or 70 dextrose equivs. resp., gave a syrup tasting less sweet in the 1st case with a viscosity corresponding to a dextrose solution of .apprx.50 dextrose equivs. and a reasonably sweet one with a low viscosity in the 2nd. The addition of 1

unit/g of ***glucoamylase*** from Rhizopus to both sirups and several hr of reaction at 50° and pH 5 increased the dextrose equivalent by about 10%. The sweetness increased without a notable increase in the viscosity and maltose content. The syrup had a low degree of crystallization

L12 ANSWER 69 OF 69 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1970:426879 HCAPLUS
DOCUMENT NUMBER: 73:26879
TITLE: Glucose syrups containing linear oligo- and polysaccharides
INVENTOR(S): Sugimoto, Kaname; Hirao, Mamoru; Mitsuhashi, Masakazu; Ogasawara, Junsuke
PATENT ASSIGNEE(S): Hayashibara Co., Ltd.
SOURCE: Fr. Demande, 11 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2005305	A5	19691212	FR 1969-9812	19690401
JP 54003939	B	19790228	JP 1968-21366	19680401
PRIORITY APPLN. INFO.:			JP 1968-21366 A	19680401

AB The title sirups are prepared by liquefying or ***gelatinizing*** at 100-180°, suspensions of starches with a 1,6-glucosidase and a saccharifying agent, such as organic or mineral acids or amylases (. ***alpha.-amylase***, β-amylase, gluco-amylase, and (or) isomerase) or a mixture thereof. The starches are preferably high-amylose starches or purified amyloses. Thus, a 35% suspension of refined starch from sweet potatoes was ***gelatinized*** and dispersed for 10 min at 160° and then quickly cooled in vacuum to 50°. For each g of starch, 20 units of pullulanase (from Aerobacter) was added, the pH adjusted to 6 and the starch reacted for 30 min at 45°. . ***alpha.-Amylase*** (15 units/g starch) was added and the batch allowed to react at 60° and pH 6 for either 5 or 20 hr. As soon as the batches attained a dextrose equivalent (D.E) of 20 or 70, the reaction was stopped, the products refined with C, passed over ion exchangers, and concentrated The 20 D.E.-sirup had little sweetness and the viscosity of a 50 D.E. sirup, whereas the 70 d.e. sirup was a sweeter liquid of low viscosity and with no tendency to crystallize. By subjecting both of these sirups for several hr at 50° and a pH of 5 to the action of a ***glucoamylase***, e.g. from Rhizopus, in the proportion of 1 unit/g of starch, the dextrose content was increased .apprx.10% and the sirups obtained were sweeter without any appreciable increase in viscosity or in maltose content. Containing less dextrose than the corresponding regular sirups, the new sirups had a higher resistance to thermal breakdown.

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=> s lsaaswrtqsiyflltdrfgrtdns/sqsp
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=> s l7 and sql=484
         72339 SQL=484
L8           6 L7 AND SQL=484

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                                                   ENTRY    SESSION
FULL ESTIMATED COST                              150.20     150.41

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FILE COVERS 1907 - 9 Aug 2007  VOL 147 ISS 7
FILE LAST UPDATED: 8 Aug 2007  (20070808/ED)

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 substance identification.

=> s l8
L9           6 L8

=> d l9 1-6

L9   ANSWER 1 OF 6  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2005:1261024  HCAPLUS
DN   144:5525
TI   Production of ethanol from enzymatically hydrolyzed starch
IN   Bhargava, Swapnil; Frisner, Henrik; Bisgard-Frantzen, Henrik; Tams, Jeppe
     Wegener
PA   Novozymes North America, Inc., USA; Novozymes A/S
SO   PCT Int. Appl., 54 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
     ---------------     ----   --------    --------------------    --------
PI   WO 2005113785        A2    20051201    WO 2005-US16390         20050511
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ,
             LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
             NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
             SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
             ZA, ZM, ZW
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RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA	2566252	A1	20051201	CA 2005-2566252	20050511
EP	1751295	A2	20070214	EP 2005-754334	20050511

R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, LV, MK, YU

IN	2006CN04176	A	20070622	IN 2006-CN4176	20061113
PRAI US	2004-570727P	P	20040513		
US	2004-632201P	P	20041201		
US	2004-633293P	P	20041203		
WO	2005-US16390	W	20050511		

L9 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:1075548 HCAPLUS
DN 143:345492
TI Enzymic starch liquefaction process for improved ethanol production
IN Bhargava, Swapnil; Bisgard-Frantzen, Henrik; Frisner, Henrik; Vikso-Nielsen, Anders; Johal, Malcolm
PA Novozymes North America, Inc., USA; Novozymes A/S
SO PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005092015	A2	20051006	WO 2005-US9218	20050318
	WO 2005092015	A3	20060727		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US	2007141689	A1	20070621	US 2006-593164	20061018
PRAI US	2004-554615P	P	20040319		
US	2004-575133P	P	20040528		
WO	2005-US9218	W	20050318		

L9 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:696593 HCAPLUS
DN 143:192412
TI Processes for producing a fermentation product, such as ethanol, from milled starch without gelatinization using glucoamylase from Athelia rolfsii and acid α-amylase
IN Allain, Eric; Wenger, Kevin S.; Bisgard-Frantzen, Henrik
PA Novozymes North America, Inc, USA; Novozymes A/S
SO PCT Int. Appl., 96 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005069840	A2	20050804	WO 2005-US1147	20050114

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1745122 A2 20070124 EP 2005-711438 20050114
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, LV, MK, YU

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L9 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:1059495 HCAPLUS
DN 142:22620
TI Brewing with simultaneous saccharification of starch
IN Olsen, Hans Sejr; Norman, Barrie Edmund; Wuempelmann, Mogens; Tams, Jeppe Wegener
PA Novozymes A/S, Den.
SO PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004106533	A1	20041209	WO 2004-DK373	20040528

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

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L9 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:780639 HCAPLUS
DN 141:294792
TI Alcohol product processes
IN Olsen, Hans Sejr; Pedersen, Svend; Festersen, Rikke Monica
PA Novozymes A/S, Den.
SO PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DT Patent

LA English
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	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004080923	A2	20040923	WO 2004-DK154	20040310
	WO 2004080923	A3	20041216		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
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L9 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:368675 HCAPLUS
DN 136:385041
TI Secondary starch liquefaction in fermentation ethanol production
IN Veit, Christopher; Felby, Claus; Fuglsang, Claus Crone
PA Novozymes A/S, Den.; Novozymes North America, Inc.
SO PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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	EP 1335982	A2	20030820	EP 2001-982195	20011109
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
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